

The AMERICAN  
CLAY-WORKING  
MACHINERY CO.

BUCYRUS  
OHIO, U.S.A.







THE



# AMERICAN CLAY-WORKING MACHINERY CO.



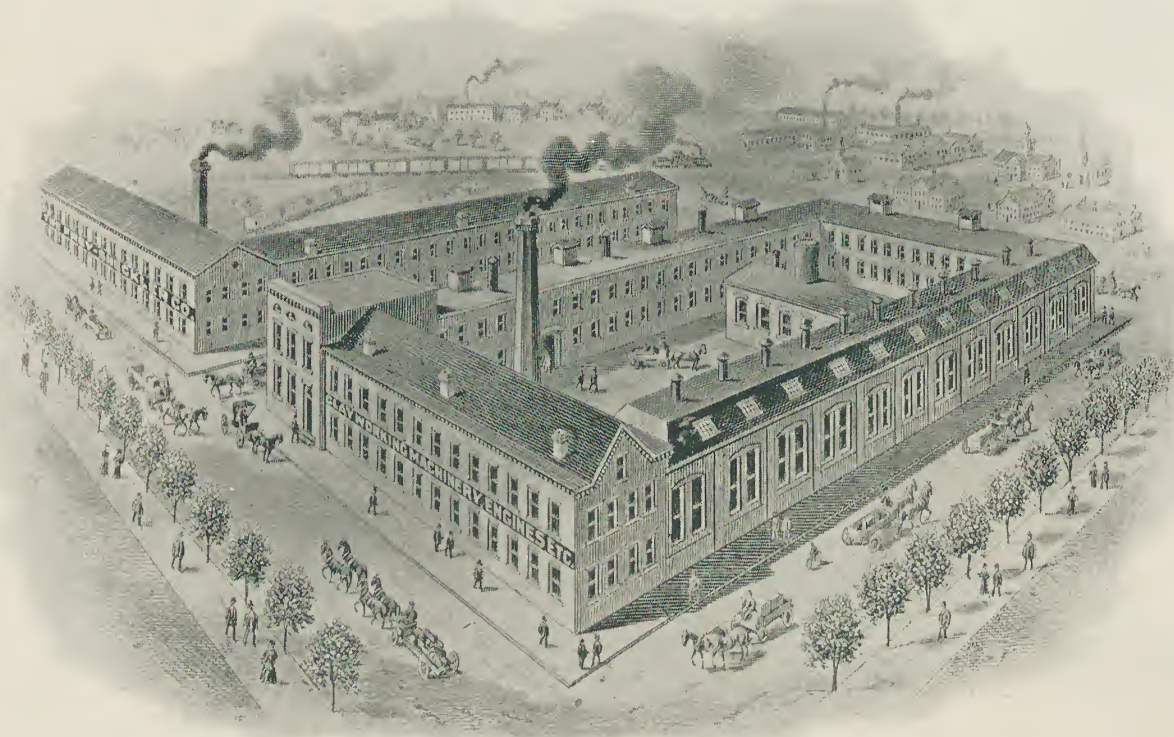
Designers and Equippers

Of Complete Brick-Making Plants



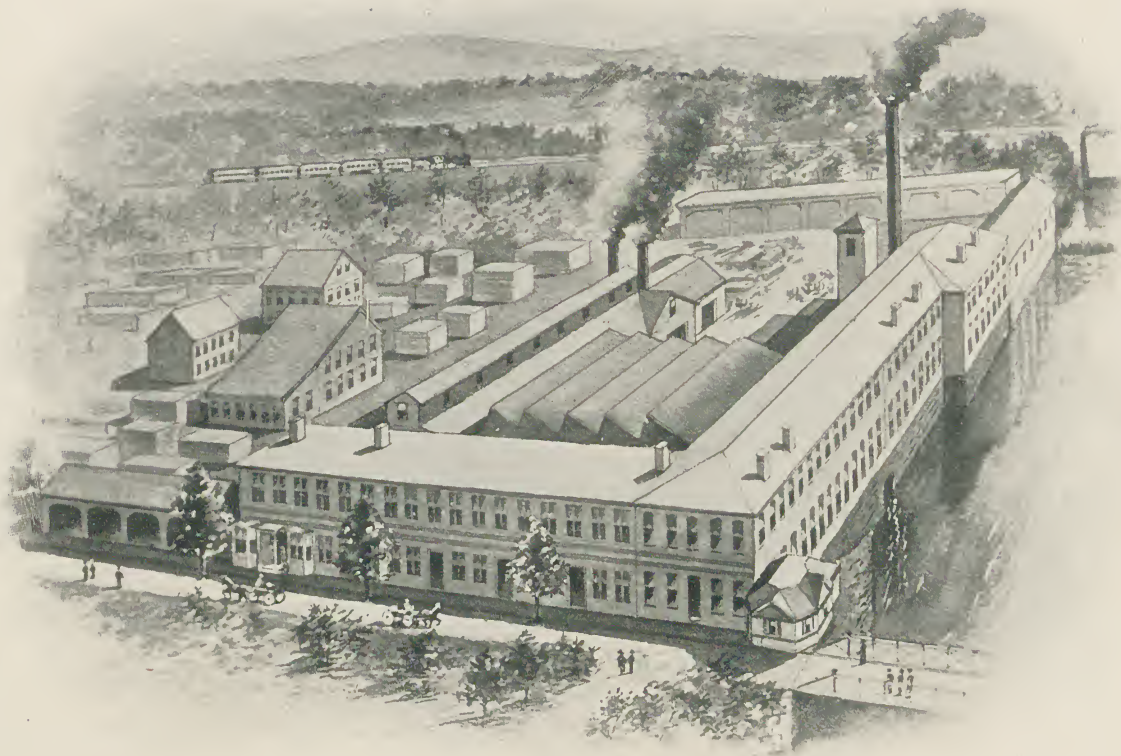
BUCYRUS, OHIO  
U. S. A.





Works of American Clay-Working Machinery Company, at Bucyrus, Ohio.





Works of American Clay-Working Machinery Company, at Willoughby, Ohio.







## INTRODUCTION



IN September 1st, 1896, the machinery manufacturing plants, patterns, patents and good-will of the Frey-Sheckler Company, of Bucyrus, Ohio, and J. W. Penfield & Son, of Willoughby, Ohio, were sold to the undersigned. The several departments of the two companies have been merged, and the list of goods produced comprises all of the lines formerly made by the individual concerns. By this consolidation of interests, there was formed the largest, most valuable and best equipped enterprise of the kind in the world, both as to personnel, manufacturing facilities and equipment, patents owned and controlled, and variety of clay-working machines and appliances produced.

The patents acquired and controlled by the new company are over seventy in number, and comprise the bulk of the most valuable clay-machinery patents in force.

The list of machinery produced embraces nearly every conceivable form of clay manipulating appliances, and with the resources, facilities and improved methods of manufacture at our command, enables us to fully equip any clay-working establishment with a complete and perfect outfit entirely suited to its requirements, and at the lowest price consistent with good goods. We can furnish the right kind of machinery for handling *any* material suitable for the manufacture of clay products.

Our variety of patterns makes us unprejudiced. We can and will recommend to any party the machinery best suited to his particular clay and requirements.

Our machinery is placed upon its merits and satisfaction guaranteed.

Our aim will be to keep fully abreast of the times in every respect, to produce the best clay-working machinery, both as to design, construction and performance, and to sell the same at a fair and reasonable price. We know how to do this, and have the necessary facilities at our command. An examination of our goods and our prices, we believe, will convince you that we can serve you to your complete satisfaction and advantage.

Soliciting your correspondence and patronage, we remain,

Respectfully yours,

**THE AMERICAN CLAY-WORKING MACHINERY CO., Bucyrus, Ohio, U. S. A.**

## PATENTS

Our special machinery and appliances are covered by a large number of separate and distinct United States and foreign patents. Over seventy patents covering many novel, distinctive and valuable improvements in clay working machinery are owned and controlled by this company, and are still in active force and operation. The list of these patents is as follows:

Letters Patent No. 221,934, Granted November 25, 1879.  
Letters Patent No. 252,451, Granted January 17, 1882.  
Letters Patent No. 272,727, Granted February 20, 1883.  
Letters Patent No. 276,366, Granted April 24, 1883.  
Letters Patent No. 276,544, Granted April 24, 1883.  
Letters Patent No. 289,025, Granted November 27, 1883.  
Letters Patent No. 289,026, Granted November 27, 1883.  
Letters Patent No. 291,616, Granted January 8, 1884.  
Letters Patent No. 292,251, Granted January 22, 1884.  
Letters Patent No. 292,576, Granted January 29, 1884.  
Letters Patent No. 292,577, Granted January 29, 1884.  
Letters Patent No. 293,270, Granted February 12, 1884.  
Letters Patent No. 295,533, Granted March 25, 1884.  
Letters Patent No. 307,327, Granted October 28, 1884.  
Letters Patent No. 320,865, Granted June 23, 1885.  
Letters Patent No. 340,668, Granted April 27, 1886.  
Letters Patent No. 340,669, Granted April 27, 1886.  
Letters Patent No. 350,744, Granted October 12, 1886.  
Letters Patent No. 365,627, Granted June 28, 1887.

Letters Patent No. 368,929, Granted August 30, 1887.  
Letters Patent No. 385,317, Granted June 26, 1888.  
Letters Patent No. 391,697, Granted October 23, 1888.  
Letters Patent No. 391,698, Granted October 23, 1888.  
Letters Patent No. 392,952, Granted November 13, 1888.  
Letters Patent No. 405,631, Granted June 18, 1889.  
Letters Patent No. 411,296, Granted September 17, 1889.  
Letters Patent No. 421,691, Granted February 18, 1890.  
Letters Patent No. 421,692, Granted February 18, 1890.  
Letters Patent No. 423,915, Granted March 25, 1890.  
Letters Patent No. 426,315, Granted April 22, 1890.  
Letters Patent No. 436,929, Granted September 23, 1890.  
Letters Patent No. 446,338, Granted February 10, 1891.  
Letters Patent No. 453,054, Granted May 26, 1891.  
Letters Patent No. 454,780, Granted June 23, 1891.  
Letters Patent No. 456,449, Granted July 21, 1891.  
Letters Patent No. 472,618, Granted April 12, 1892.  
Letters Patent No. 473,446, Granted April 26, 1892.  
Letters Patent No. 478,136, Granted July 5, 1892.



## PATENTS—Continued

Letters Patent No. 478,436, Granted July 5, 1892.  
Letters Patent No. 478,481, Granted July 5, 1892.  
Letters Patent No. 480,912, Granted August 16, 1892.  
Letters Patent No. 480,935, Granted August 16, 1892.  
Letters Patent No. 480,936, Granted August 16, 1892.  
Letters Patent No. 480,937, Granted August 16, 1892.  
Letters Patent No. 482,705, Granted September 13, 1892.  
Letters Patent No. 483,088, Granted September 20, 1892.  
Letters Patent No. 485,283, Granted November 1, 1892.  
Letters Patent No. 491,747, Granted February 14, 1893.  
Letters Patent No. 496,286, Granted April 25, 1893.  
Letters Patent No. 497,839, Granted May 23, 1893.  
Letters Patent No. 501,583, Granted July 18, 1893.  
Letters Patent No. 504,761, Granted September 12, 1893.  
Letters Patent No. 504,781, Granted September 12, 1893.  
Letters Patent No. 513,544, Granted January 30, 1894.  
Letters Patent No. 515,383, Granted February 29, 1894.  
Letters Patent No. 516,882, Granted March 20, 1894.  
Letters Patent No. 519,801, Granted May 15, 1894.  
Letters Patent No. 536,610, Granted April 2, 1895.

Letters Patent No. 537,808, Granted April 16, 1895.  
Letters Patent No. 538,697, Granted May 7, 1895.  
Letters Patent No. 548,935, Granted October 29, 1895.  
Letters Patent No. 548,936, Granted October 29, 1895.  
Letters Patent No. 548,937, Granted October 29, 1895.  
Letters Patent No. 551,690, Granted December 17, 1895.  
Letters Patent No. 555,349, Granted February 25, 1896.  
Letters Patent No. 555,838, Granted March 3, 1896.

## FOREIGN PATENTS

Letters Patent No. 46,199, Granted June 1, 1894, Canada.  
Letters Patent No. 48,258, Granted February 18, 1895, Canada.  
Letters Patent No. 498, Granted January 8, 1895, United Kingdom of Great Britain and Ireland.  
Letters Patent No. 244,196, Granted January 8, 1895, France.  
Letters Patent No. 87,487, Granted January 8, 1895, Germany.  
Other patents are now pending.

## IMPORTANT NOTE

The kind of clay-working machinery to be used and its capacity depend largely upon the nature of the clay and its condition as it comes to the machinery.

It will aid us materially if you will fully describe to us the nature of your clay, and its condition as it comes from the bank; also state the results you wish to accomplish. We will then know what style and size of machinery to recommend for your use, thereby avoiding the liability of making mistakes in the selection of an outfit.

When considering the purchase of clay preparing machinery, always figure to secure a surplus of strength and capacity. The extra investment required will be a profitable one.

## TESTING CLAYS

We have a special department for this purpose, equipped with a full line of our most improved Machinery, Steam Dryer and Burning Kilns.

This department is constantly in charge of several clay experts, who devote their entire time to the testing of clays shipped to us from all points of the United States, Canada, Mexico and Cuba.

### OUR CHARGE FOR MAKING EACH TEST OF CLAY IS \$5.00

Payable in advance. Should, however, the party or parties having the clay tested subsequently purchase machinery from us, we will, in such case, give them credit on the purchase-price of machinery for the amount paid us for clay tests.

In order to make a thorough and practical test, it will be necessary to have from

### THREE TO FOUR BARRELS OF THE CLAY

When shipping the clay always prepay freight charges thereon to Bucyrus, Ohio. The barrels should be carefully marked with the shipper's name and post office address, so that the consignment can be identified upon arrival.

Trials of clay are made for common, paving, repressed, semi-pressed, fire and silica brick of all dimensions; also for tile, sewer-pipe, hollow blocks and fire-proofing.



# PRESS BRICK MACHINES, STYLE "P"

## MODE OF OPERATION

For the benefit of those not familiar with the semi-plastic process of making brick, it may be well to briefly describe the mode of operation. The clay, which must be in nearly a dry condition, or with but little moisture incorporated with it, should be thoroughly ground, pulverized and screened, until of about the consistency of flour. In some cases the clay is passed through a clay steamer (see page 30), which at the same time sprays a fine jet of steam and hot water upon the clay, slightly and uniformly moistening it. This steaming process is found advantageous in many kinds of material. The prepared clay is deposited in a bin, provided at the bottom with two canvas bags, which communicate with openings in the hopper of the brick press. The clay is fed into the dies or molds by a reciprocating charger, located at the bottom of the hopper, and having compartments corresponding to those in the dies. At each revolution of the machine, the charger moves forward, and when it is directly over the molds, the bottom plungers in the molds descend, allowing the molds to be filled with clay. The charger is quickly withdrawn as soon as it has filled the molds. A shut-off plate shuts off the supply of clay from the canvas bags while the charger is filling the molds, and again admits the clay to the charger when it has returned to position. When the molds are filled with clay and the charger withdrawn, the top and bottom plungers move toward each other in the molds, powerfully compressing the clay between them, first from the top, and then from the bottom. The pressure is then entirely released, and by means of the patent pressure-repeating attachment, found only on our Machines, another pressure is secured from both the top and the bottom, but with the difference that

the top plunger descends farther than at the previous stroke. It thereby compresses the clay more densely and compactly than would otherwise be the case, pressing more clay into each cubic inch of the brick, and securing a superior product, with sharp, well-defined corners, and perfect angles. After the final pressure is applied to the brick, the upper plungers are withdrawn from the molds, and the bottom plungers raise the brick to a level with the top of the mold, the pressure being continued until the brick reach the top of the mold, thus imparting smooth, polished surfaces to the brick. The next forward stroke of the charger pushes the brick upon the mold table, from which they are lifted by the operator, deposited upon barrows or cars, and removed to the dryers or kilns. In some instances, the brick are set at once in the kiln and burned without further drying. It has been found, however, that in many instances more uniform results can be had in burning, and a more desirable product secured, if the brick are dried in an artificial dryer before setting them in the kiln.



# PRESS BRICK MACHINES, STYLE "P"

## GENERAL DESCRIPTION

### GENERAL CONSTRUCTION

Our Semi-Plastic Brick Machines are constructed of the best of materials, and are of unusually massive proportions, provision being made throughout for a surplus of strength. The shafting throughout is of steel, unusually large in diameter, with long bearings, and gearing of proportionate strength. Steel forgings and castings are plentifully employed wherever extra strength or durability is required. The aim has been to combine great strength and efficiency with the highest possible degree of simplicity and the fewest parts. In operation, the machines are light-running, and work smoothly and evenly, producing the finest grade of plain or ornamental brick.

### THE PRESSURE

This is a most important factor in the success of any Press Brick Machine. Assuming that the clay is of suitable quality and is properly prepared, the quality of the brick produced will then depend principally upon three items: namely, the amount of pressure exerted, the length of time the pressure remains upon the brick and the number of pressures that are given. Our Machines offer special advantages in all of these important items.

FIRST. They are built with such strength throughout that they are capable of exerting a pressure of 125 tons on each brick, without breaking the machine or unduly straining it. The dimensions of the parts sustaining the pressure are figured with a safety factor of 6; consequently, six times the amount of power named can be exerted on the steel side-bars without stretching them in the least.

SECOND. By means of the elliptical gears, peculiar to our Machines there is secured a long dwell of the pressure upon the brick, and a quick return of the pressing parts, the pressing of the brick alone occupying the greater part of the time required for each complete revolution of the machine. Thus, longer time is allowed for the pressure than in any other machine upon the market.

THIRD. The bricks are first pressed both from the top and the bottom; the pressure is entirely released, and then, by means of our patent pressure-repeating attachment, the pressure is repeated from both top and bottom with increased length of stroke, thereby compressing the clay far beyond the limit otherwise possible. The pressure is held upon the brick while they are being expelled from the mold, thus securing a beautiful finish.

This series of unusually powerful and long-continued pressures expels the air thoroughly from the brick, and presses the clay particles closely together, securing a product of great density, strength and uniformity. This is why our Press Brick Machines press more clay into brick of a given size, and turn out a better and more serviceable product than is done by other brick-press machines.

### THE TOGGLE

The machine is provided with an improved toggle, the centers (upon which the toggle arms turn) being separate from the toggle arms and free to turn upon their own shafts. These steel centers or toggle rings have a tendency to turn a trifle at each revolution of the machine, thereby distributing the wear evenly upon the rings and lessening the liability of their wearing off elliptically. Should the parts become badly worn after long usage, the toggle arms can be rebored and new center rings inserted, thereby making this part of the machine as good as new without replacing the main and heavier portions of the toggle.

### THE PRESSING STRAIN, HOW SUSTAINED

The three toggle journals sustaining the strain of pressing the brick are unusually large, and have bearings of more than ample strength. To the lower toggle is connected the upper cross-head. The toggles are connected to the lower cross-head under the molds by two massive forged-steel side-bars, enlarged at the ends to receive the upper toggle-shaft and the lower cross-shaft. To these powerful side-bars is transmitted the strain of pressing the brick. None of the strain of pressing comes upon the machine frame, which serves merely to guide the pressing mechanism, and to sustain the thrust of the gearing in transmitting the power.



## THICKNESS OF THE BRICK

The thickness of the brick can be quickly regulated by the lever working in the slotted sector or semicircle at the upper right hand of the machine. Throwing the lever forward makes the brick thinner; throwing it back makes them thicker. This slotted sector can be accurately graduated, so that the lever can be instantly set to secure any desired thickness of brick. This quickly secured adjustment obviates the necessity of shimming up the die with tin or iron strips, and makes it especially convenient for producing both common and face brick on the same machine. Five-eighths of an inch is the limit of variation in the thickness of the brick.

## AMOUNT OF CLAY IN THE BRICKS

The amount of clay pressed into the bricks can be quickly regulated by means of the hand-wheel under the mold table in front of the machine. Turning the wheel to the left increases the amount of clay in each brick; turning it to the right decreases it. The amount of clay that can be successfully compressed into brick of a given size depends largely upon the nature of the clay. Our method of adjustment makes it easy to readily adapt the machine to meet the requirements of any clay, producing satisfactory results under varying circumstances.

## ADJUSTING THE MOLD BOTTOMS

Should the mold bottoms become worn, they can be quickly adjusted to compensate for this wear, by means of the slotted eccentric boxes on the ends of the walking-beam center-shaft.

## THE DIE

The die or mold is composed of a nicely fitted heavy frame, very thick, with removable liners of extra hard, white iron, forming the most durable kind of a die that can be secured. The liners can be readily removed and replaced in case of wear. The upper and lower plungers are arranged for steam connection, so that the die can be steam heated, if desired. In many cases this is found to be of decided advantage.

## **SOME OTHER DETAILS**

The side frames are extra heavy, and mounted upon a heavy iron base, insuring great rigidity. The top of the mold table is nicely finished. The machine is provided with an Imperial Friction Clutch Pulley, the pulley and brake being both operated simultaneously by a single lever, so that the machine can be started or stopped instantly at any point in its revolution. All bolts used in the construction of the machine are finished. All journal-caps are provided with lock-nuts. Large glass oil-cups are provided for all bearings. The shafting throughout, side-bars, elliptical gears, and toggle-centers are all of steel. The pinions are double-boxed. All parts of the machine are fitted up carefully by fixed gauges.

## **SATISFACTION GUARANTEED**

We can fully recommend our Press Brick Machines as being strictly first-class in every way, and have no hesitancy in placing them upon their merits and guaranteeing satisfaction.

## 6-MOLD PRESS BRICK MACHINE, STYLE "P"

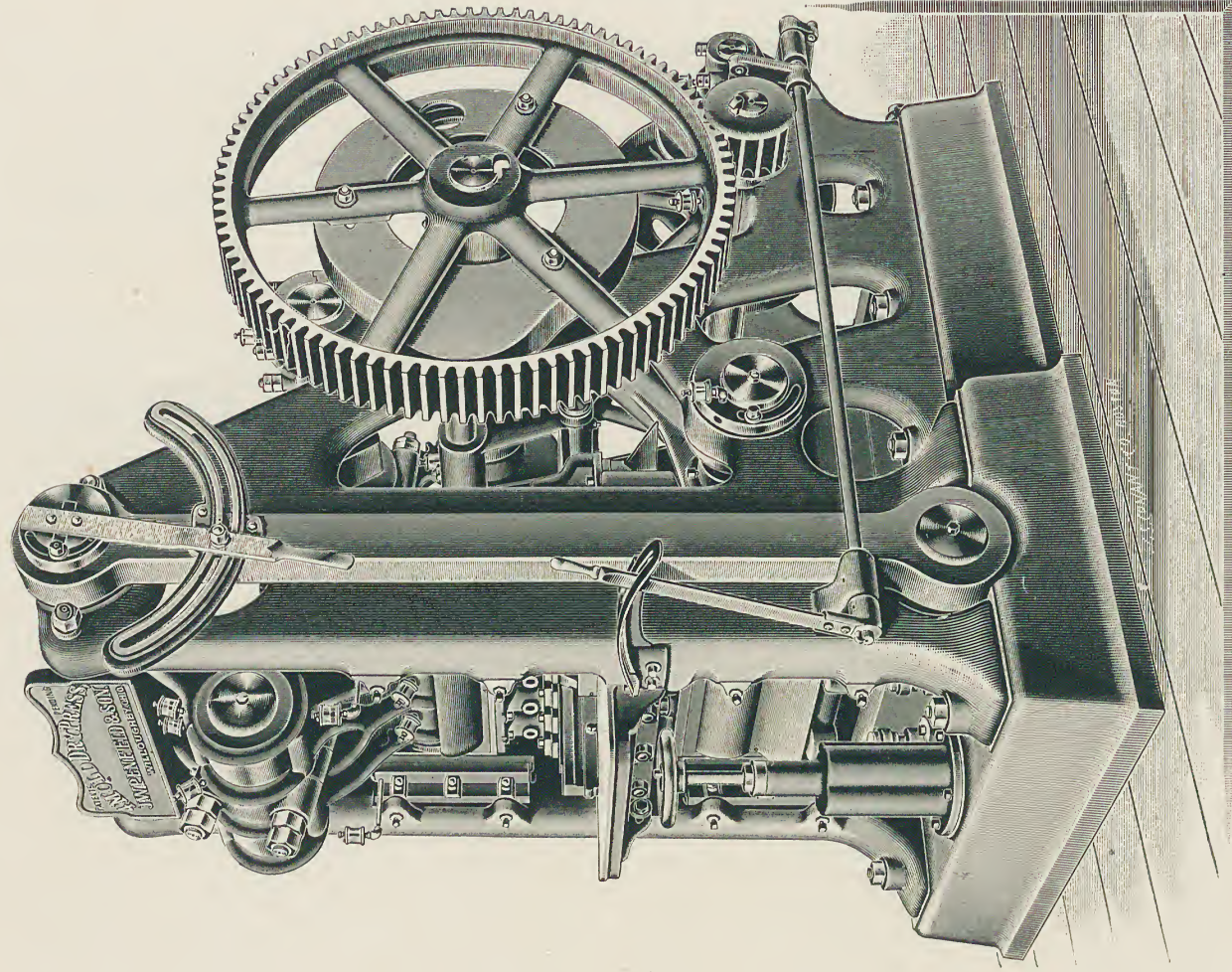
*PATENTED*

This machine is the largest Press Brick Machine we manufacture, being suitable for use in plants where a capacity of from 25,000 to 30,000 brick per 10 hours is desired. The machine is constructed throughout on the same general principle as the 4-Mold Machine, D 4 Model, having the side bars arranged on the outside of the frame. The construction is extra strong and substantial throughout, and the wearing parts are unusually massive, strong and powerful. The machine is capable of exerting an enormous pressure upon the clay, and of producing from it the finest quality of pressed brick.

### SHAFTING, GEARING, PULLEYS AND SPEED

The shafting throughout is of steel and of large diameter. The gearing is extra heavy. The pinions are boxed. The machine is provided with an Imperial Friction Clutch Pulley, 36 inches in diameter, 12 inch face. The machine is back-gearred, 28 to 1. For a speed of 8 molds per minute, the pulley should make 225 revolutions. Power required, 25 horse-power.





4-Mold Press Brick Machine. D 4 Model. Style "P."  
PATENTED.

# 4-MOLD PRESS BRICK MACHINE

D 4 MODEL. Style "P"

*PATENTED*

The accompanying cuts represent the D 4 Model Press Brick Machine. It is arranged to press four brick at a time, and is the largest and most powerful 4-Mold Press Brick Machine upon the market.

## SHAFTING, GEARING, PULLEYS AND SPEED

Steel shafting of unusually large diameter is used throughout. The gearing throughout is extra heavy, and of the most approved type. The machine is back-gearred, 28 to 1, and is provided with an Imperial Friction Clutch Pulley, 36 inches in diameter, 8-inch face. For a speed of eight molds per minute, this pulley should make 225 revolutions per minute.

## POWER REQUIRED

A ten horse-power engine will run the 4-mold machine easily and furnish a surplus of power. A 4-inch belt will run it successfully, and yet the gearing is amply strong to withstand the pull from a 12-inch double leather belt. To avoid high tension of belts, however, the pulleys are arranged for an 8-inch belt.

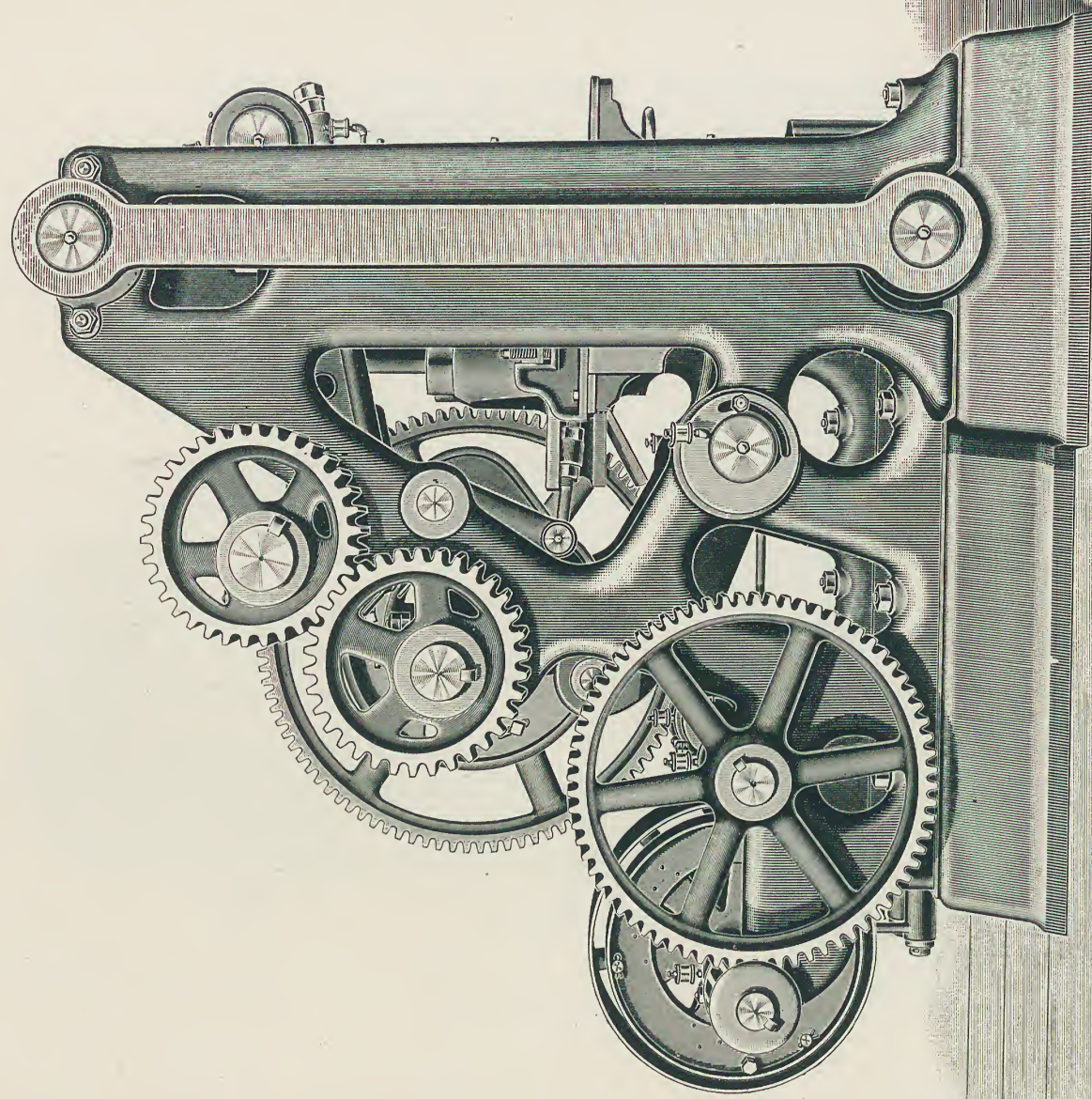
## CAPACITY

The rated capacity is 20,000 brick per ten hours. This rated capacity, however, is subject to variation, depending upon the nature of the clay used, as some clays can be successfully pressed with greater speed than others. In some instances it may be found advisable, where strictly first-class ware is to be produced, to operate the machine a trifle slower than above indicated.

## SOME DIMENSIONS

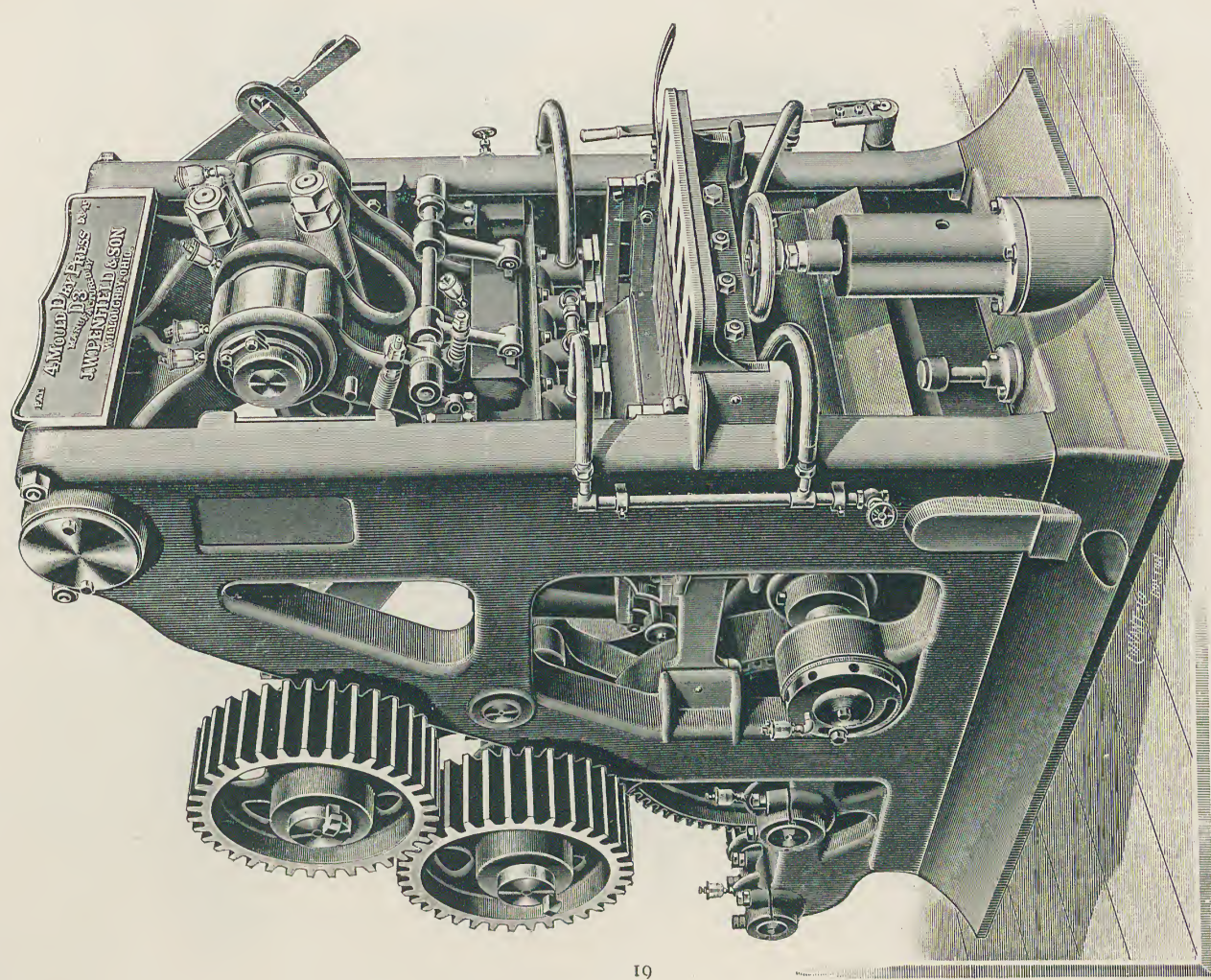
The height of the machine is 10 feet 4 inches; length of base, 8 feet 6 inches; width of base, 5 feet 2 inches; extreme length of machine, 10 feet 4 inches; extreme width of machine, 6 feet. Weight, 31,000 pounds.





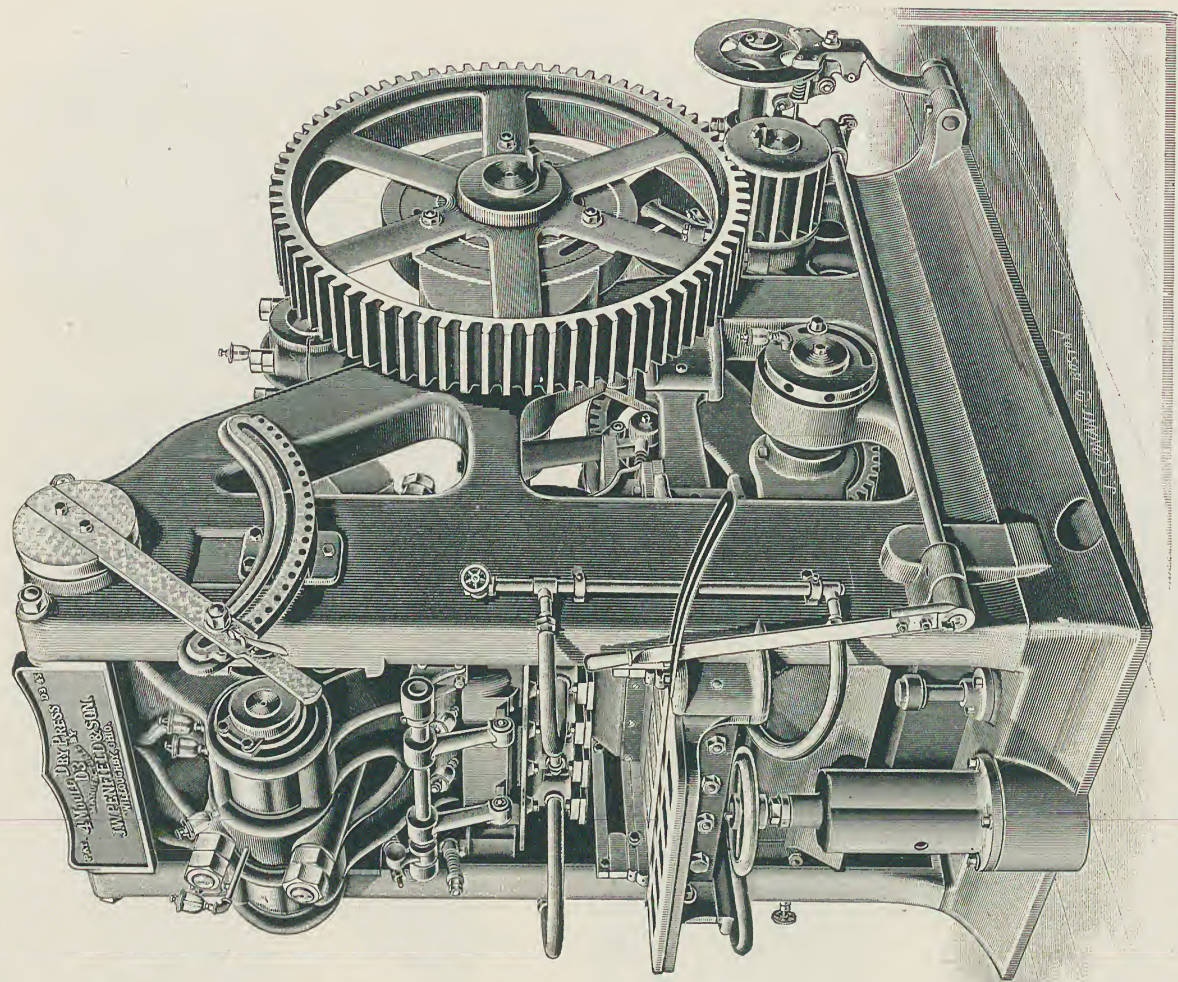
4-Mold Press Brick Machine (Side View). D 4 Model. Style "P."  
PATENTED.





4-Mold Press Brick Machine. D 3 Model. Style "P."  
PATENTED.





4-Mold Press Brick Machine. D 3 Model. Style "P."  
PATENTED.

# 4-MOLD PRESS BRICK MACHINE

D 3 MODEL. Style "P"

*PATENTED*

The accompanying cuts represent the 4-Mold Machine of the D 3 Model. This machine is constructed on the same general principle as the D 4 Model, but has the side-bars arranged inside of the frame instead of outside, thereby making the machine more compact, so that it occupies less floor space. The height of the machine is also considerably reduced, and the machine can be located upon the floor without excavating and setting the base below the floor level, and at the same time the mold-table will be of convenient height for the operator.

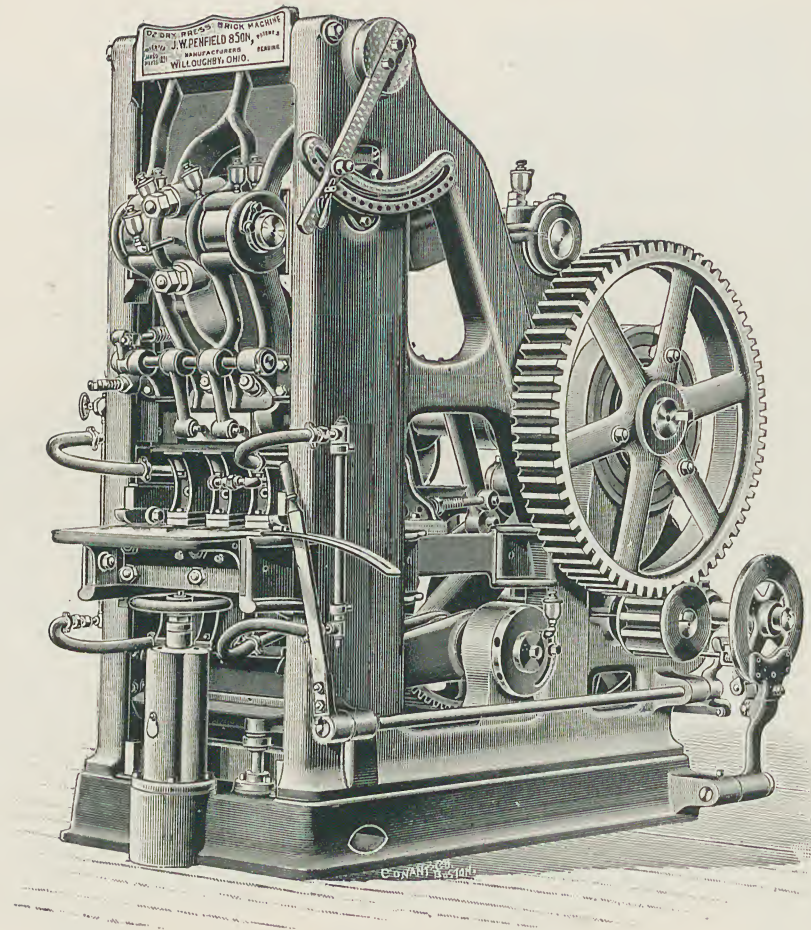
## SHAFTING, GEARING, PULLEYS AND SPEED

The shafting throughout is of steel and extra large. The gearing is very heavy and powerful, and of most approved type. The pinions are boxed. The machine is provided with an Imperial Friction Clutch Pulley, 32 inches in diameter, 8-inch face. The machine is back-gear, 28 to 1. For a speed of eight molds per minute, the pulley should be run 225 revolutions. Power required, 10 horse-power. Rated capacity, 20,000 brick per ten hours.

## DIMENSIONS

Height, 8 feet 4 inches; length of base, 7 feet 1½ inches; width of base, 4 feet 7 inches; extreme length of machine, 9 feet 6 inches; extreme width of machine, 6 feet. Weight, 21,000 pounds.





3-Mold Press Brick Machine. Style "P."

PATENTED.

## 3-MOLD PRESS BRICK MACHINE, STYLE "P"

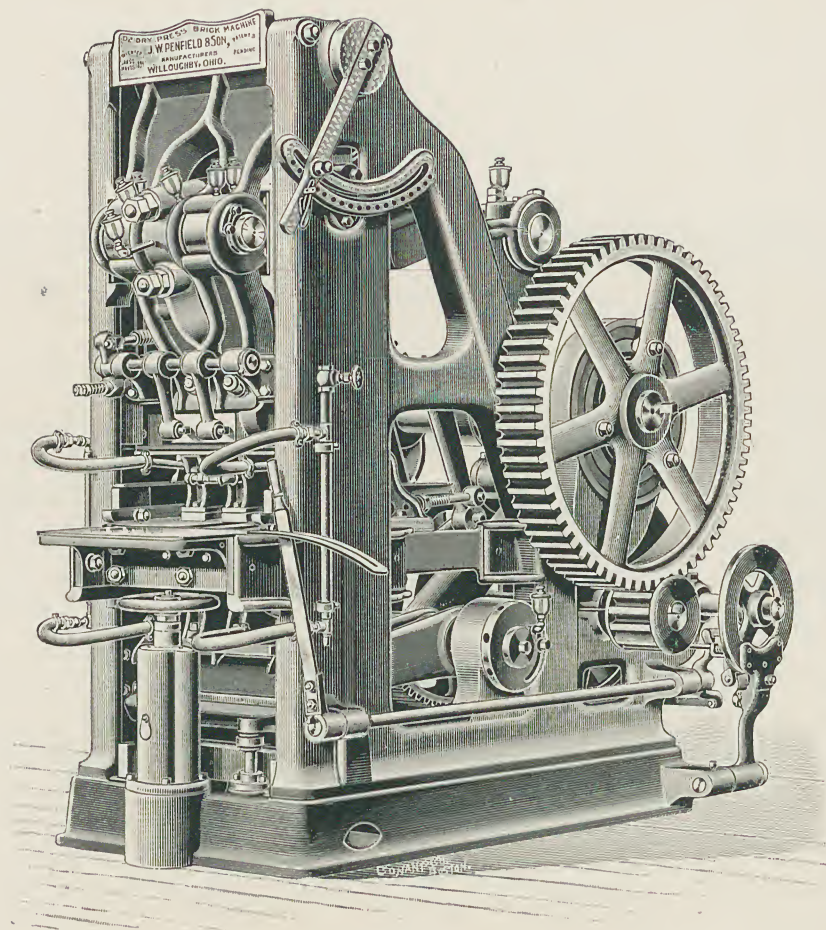
*PATENTED*

The accompanying cut represents the 3-Mold Press Brick Machine, which is built on the same general principle throughout as the 4-Mold Machine, but is smaller and of proportionately smaller capacity.

The machine is provided with all the late improvements and adjustments mentioned in the preceding general description of our Press Brick Machines. The side-bars, elliptical gears, toggle centers and all shafts, are of steel. The shafting and gearing throughout is extra heavy. The pinions are boxed. The machine is provided with an Imperial Friction Clutch Pulley, 30 inches in diameter by 8-inch face. For a speed of eight molds per minute, it should make 160 revolutions. Power required, eight horse-power. Rated capacity, 15,000 brick per ten hours.

### SOME DIMENSIONS

Height, 8 feet ; length of base, 6 feet 10 inches ; width of base, 3 feet 6 inches ; extreme length of machine, 8 feet 6 inches ; extreme width of machine, 5 feet. Weight, 14,000 pounds.



2-Mold Press Brick Machine. Style "P."

PATENTED.



## 2-MOLD PRESS BRICK MACHINE, STYLE "P"

*PATENTED*

Our 2-Mold Press Brick Machine, shown in the accompanying cut, is constructed on the same principle throughout, and with the same adjustments and improved features as our other Press Brick Machines. It is well suited for the requirements of factories requiring only a limited output of pressed brick, or for use where parties wish a small machine for ornamental brick, using a larger machine for the manufacture of the regular plain product.

The machine is built extra heavy throughout, with steel side-bars and elliptical gears, steel shafting and powerful gearing, and is provided with an Imperial Friction Clutch Pulley, 30 inches in diameter, 8-inch face. For a speed of eight molds per minute, it should run at a speed of 160 revolutions. Power required, 8 horse-power. Rated capacity, 10,000 brick per ten hours. Weight, 13,000 pounds.

# PRESS BRICK MACHINES, STYLE "F"

These machines are constructed throughout in a strong, substantial manner. The side-frames are of cast iron, mounted on a massive base plate.

## SHAFTING, GEARING AND PULLEYS

Steel shafting is used throughout. The main cam shaft is of hammered steel, provided with brass gibs for taking up the wear of the shaft. The main guide rods in which the vertical movement of the upper and lower plunger takes place, are made of cold-rolled steel and securely bolted to housings. The master wheels are extra heavy and strong, with housing on both sides. The pinions are of steel. The machine is provided with a friction clutch pulley, 36 inches diameter, 10-inch face.

## THE PRESSURE

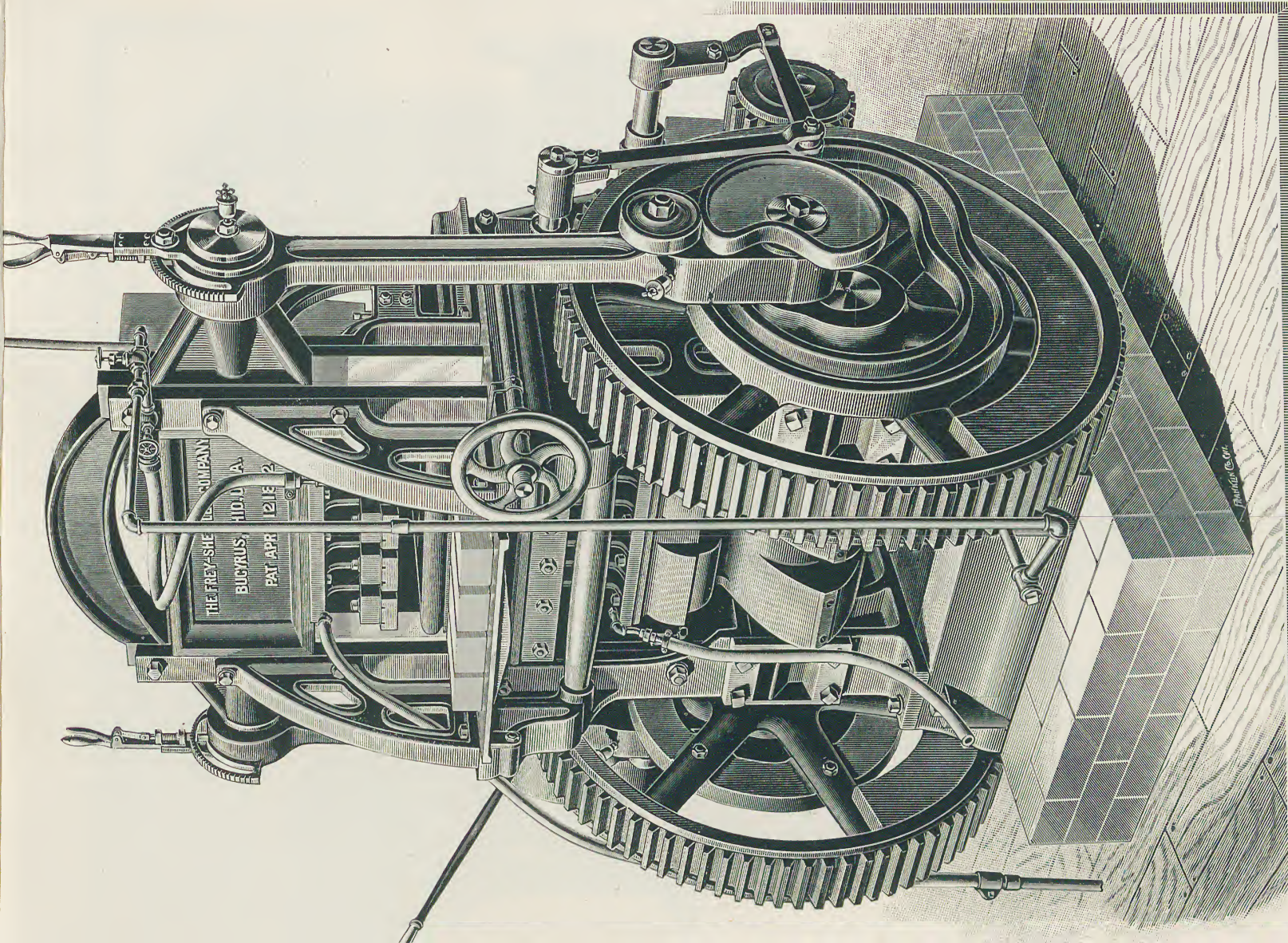
Five distinct pressures are applied on each brick, three from above and two from below. The entire pressure is relieved from the brick twice, thus allowing the air to completely escape before receiving the fifth or final pressure. The travel of the clay in the mold is unusually long, producing a highly polished brick with perfect edges, and free from granulations on the outside surface.

## OTHER DETAILS

The two massive side connecting rods are of cast steel bushed with bronze metal. These two rods sustain the entire strain of pressing the brick. The top bushings in the connecting rods are eccentric in shape, with a slotted quadrant and lever attached. By moving this lever backward or forward, the thickness of the brick is regulated. The amount of clay pressed into the brick is regulated by means of the hand wheel on the right hand side of the machine. The mold is composed of cast-iron frames, accurately fitted and lined with a high grade of self-hardening steel. The liners can be readily removed and replaced when necessary. The mold is held in place by adjustable screws. The mold charger, upper and lower plungers are all arranged for steam heating, conveying heat to the mold and preventing clogging or adhesion of clay.

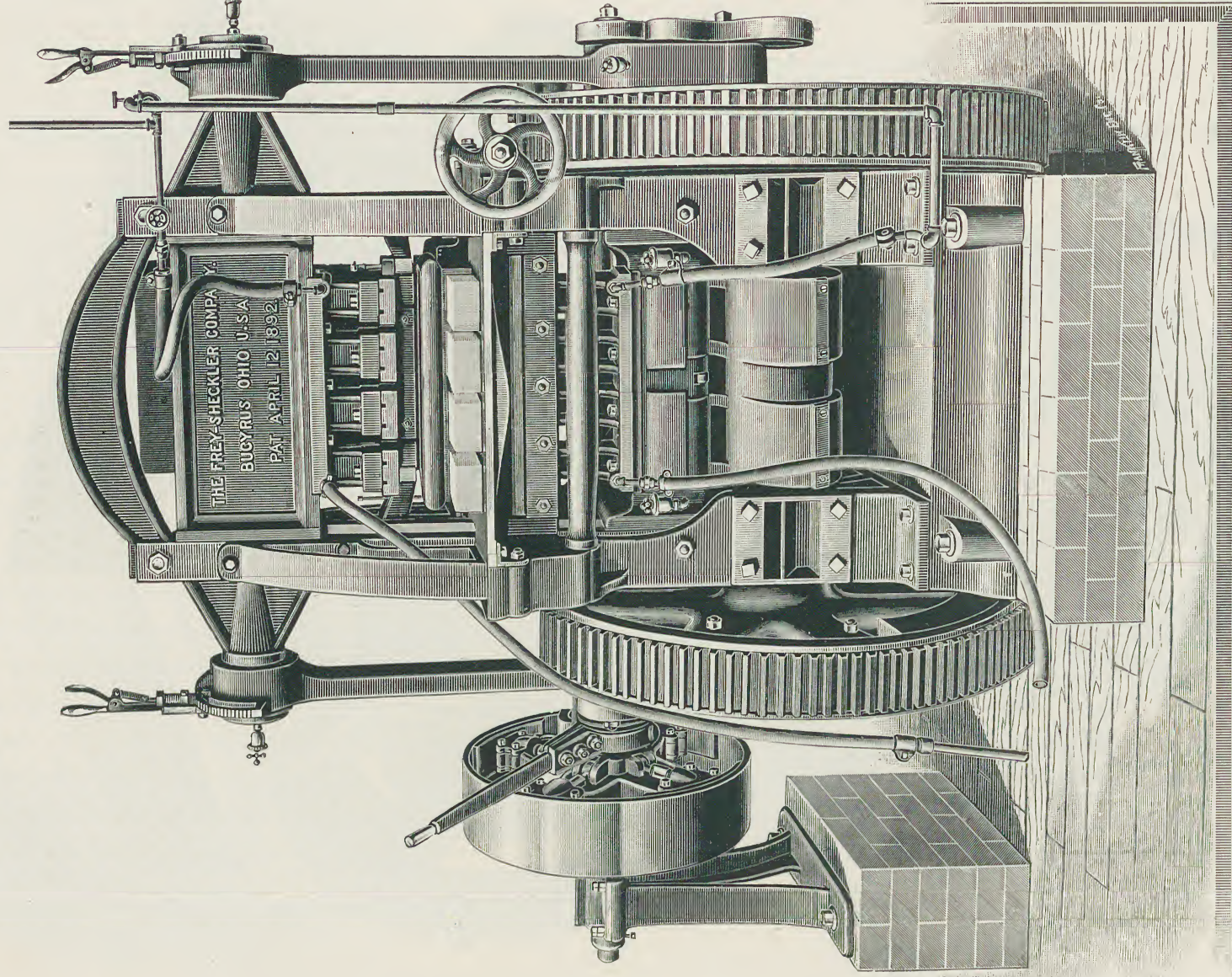
The machine is built in two sizes—namely, two and four mold. The rated capacity of the two-mold machine is 10,000 brick per ten hours. Power required, four horse-power. Rated capacity of four-mold machine, 20,000 brick per ten hours. Power required, about eight horse-power. Weight, two-mold machine, 13,000 pounds. Weight, four-mold machine, 16,300 pounds.





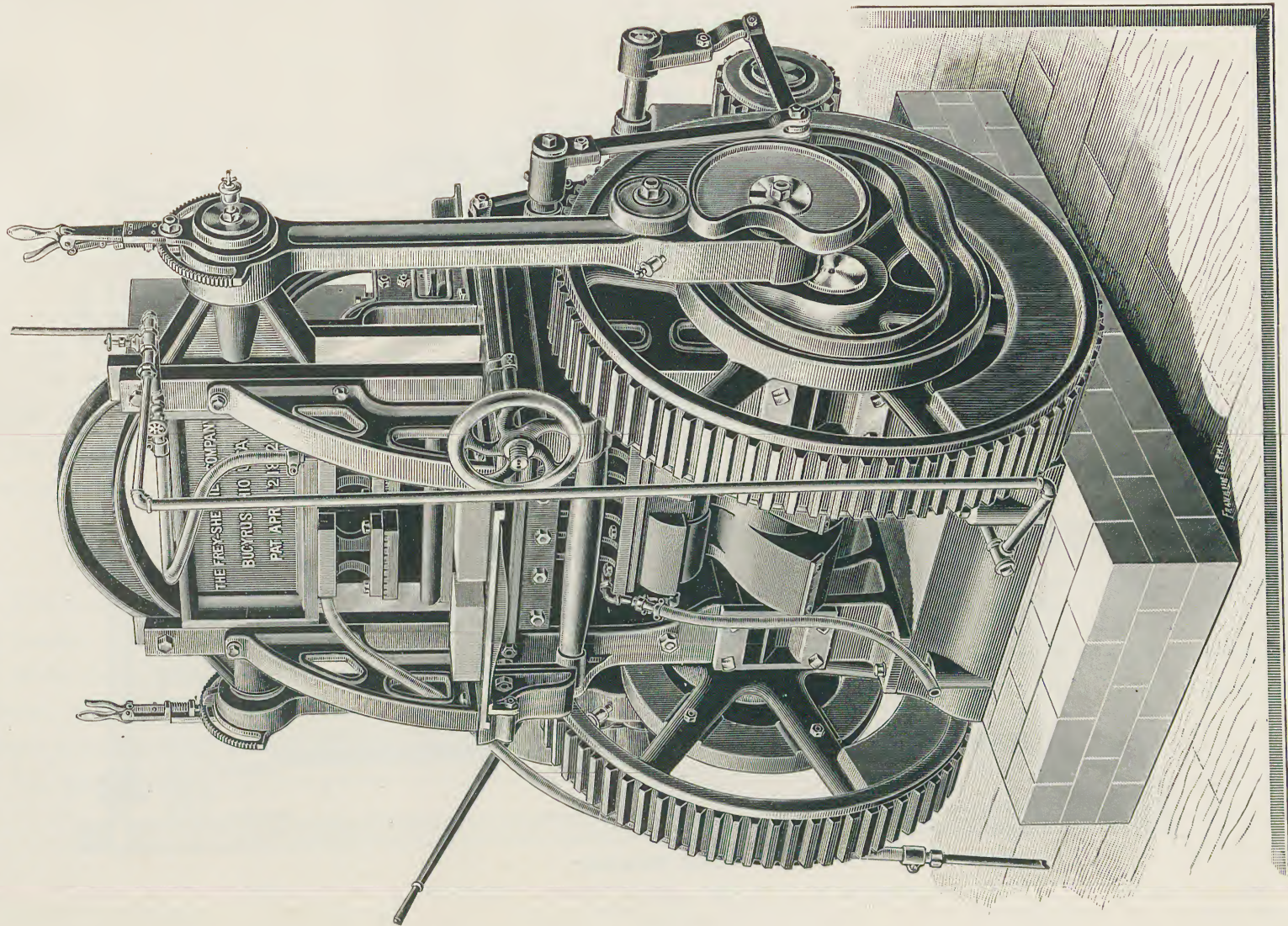
4-Mold Press Brick Machine. Style "F."





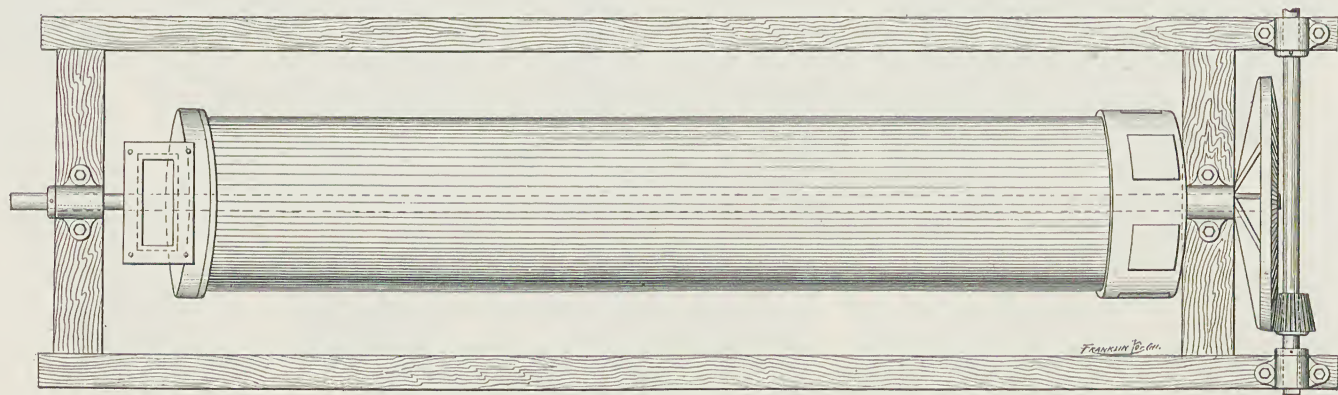
4-Mold Press Brick Machine. Style "F."





2-Mold Press Brick Machine. Style "F."





Clay Steamer.



# CLAY STEAMERS

The Clay Steamer is used in connection with our Semi-Plastic Brick Press Machines.

## CONSTRUCTION

The Clay Steamer consists of a steel cylinder 20 inches in diameter, 10 feet long, which revolves on a steel shaft 2 inches in diameter, at an angle of about 10 degrees.

The cylinder is supplied with a cast-iron hopper at the highest point, which is secured to the cover, at which point the granulated clay enters the cylinder, and therein it is permeated with the proper amount of moisture in passing along down the cylinder.

## OPERATION

This machine is driven by bevel or straight gearing, as circumstances require, and the cylinder should make about 35 or 40 revolutions per minute.

While the cylinder is in motion, the granulated clay is being agitated by steel rods, which are fixed in a lateral position within the cylinder. With this method the clay is thoroughly prepared, and ready for entering the Semi-Plastic Brick Press. The prepared clay is discharged at the lower end through the six square openings, as shown in the cut.

The machine is mounted upon a wood frame, and occupies a floor space of 5 feet 6 inches by 13 feet 6 inches.

# USES OF OUR AUGER MACHINERY

Our Auger Machines are well suited for the manufacture of building, paving, and fire brick, as well as for a variety of other products.

## PAVING BRICK

The use of brick for paving purposes has become so general of late that in many places extensive plants are devoted exclusively to the manufacture of this class of brick. Our machines are successfully used for this purpose by many of the leading paving brick manufacturers of the country. Send for our book on "Brick Pavements."

## DRAIN TILE

They are used very successfully for the manufacture of drain tile of different sizes.

## RAILROAD BALLAST

The machines can be readily arranged for the manufacture of burned-clay railroad ballast, making it into bars of the desired size and length, which, when thoroughly vitrified, form tough, impervious blocks, admirably adapted for the purpose.

## COMPRESSING IRON ORE

This class of machinery is also well suited for compressing and molding ground iron ore of argillaceous or clayey nature, or ground iron ore mixed with a percentage of clay, so that the particles will adhere together, enabling them to be successfully molded by the machine. Our auger machines form this class of material into uniform blocks, ensuring added convenience in arranging the same in the furnaces, preparatory to roasting and smelting.

## PORTLAND CEMENT

The machines are excellently adapted for cement manufactories. After the ingredients are thoroughly mixed, and moisture incorporated, the mixture is shaped into uniform blocks of size convenient for handling, preparatory to burning or calcining.

# AUGER BRICK MACHINES

## MODE OF OPERATION

The clay used should be in a moist, plastic condition, uniformly tempered, and stiff enough so that when made into brick they can at once be hacked without losing their shape.

The main shaft of the machine is provided with suitable tempering knives and expressing auger, and revolves in a cylindrical tapering tub, provided with a die at the front end. The knives and auger propel the clay through the die in a continuous, constantly moving stream, which is cut into brick by suitable wire-strung mechanism. The clay as forced forward is compressed, making brick of the utmost density, which is especially desirable in the manufacture of paving brick.

For end-cut brick we ordinarily provide an automatic sander and automatic cutter and separator, so that after the clay is fed into the machine no further manual labor is required until the brick, automatically sanded, cut, and separated, reach the end of the off-bearing belt, ready to be conveyed to the drying department. In many works the off-bearing belt is so lengthened that the brick are delivered at a distant portion of the yard or adjacent to the dryer, ensuring added convenience and saving of labor.

Where side-cut brick are made, we can furnish either automatic or semi-automatic cutters with off-bearing aprons, or hand-power board or belt delivery cut-off tables, as may be ordered by the purchaser.



# AUGER BRICK MACHINES

## GENERAL CONSTRUCTION

They are built of the best materials throughout. The proportions are so generous as to secure a surplus of strength. Provided with the most approved methods for taking up the wear. They are so constructed that the wear is never excessive. Each machine is self-contained, and the heavy framework holding the bearings insures rigidity and permanent alignment. The journals are all long and conveniently arranged for oiling.

## SUSTAINING THE END THRUST

The end thrust at the rear of the main shaft is sustained by renewable hard metal discs, which receive all the wear from the end thrust of the shaft, are small and can be replaced at slight expense. The casting holding the thrust plates forms an oil reservoir, the plates being so grooved as to catch the oil and distribute it over their surfaces, thus reducing friction and wear.

## AUGER AND KNIVES

The Auger is of white metal, extra hard and nicely ground and polished. These augers are made from a variety of different patterns, the style used in a machine depending upon the class of ware to be produced. The knives are so arranged that they can be set in a variety of different positions, thereby regulating the pugging capacity and the rapidity with which the clay is fed forward in the machine. The knives can be removed or set in different positions without taking out the shaft. Some clays feed forward more rapidly than others, consequently the fact that the knives can be set in the desired position to secure the best results as to capacity, pugging, etc., is a decided advantage, insuring the adaptability of the machine to the particular kind of clay that is used.

## CONCAVES OR CLAY CYLINDER

The concaves are made extra heavy and in parts, thus facilitating cleaning the machine or removing the knives or auger.

## PULLEYS AND GEARING

The gearing is of approved pattern, extra strong and heavy. Each machine is provided with a friction clutch pulley, enabling the operator to start or stop the machine instantly ; also avoiding shifting of belts.

## DIE

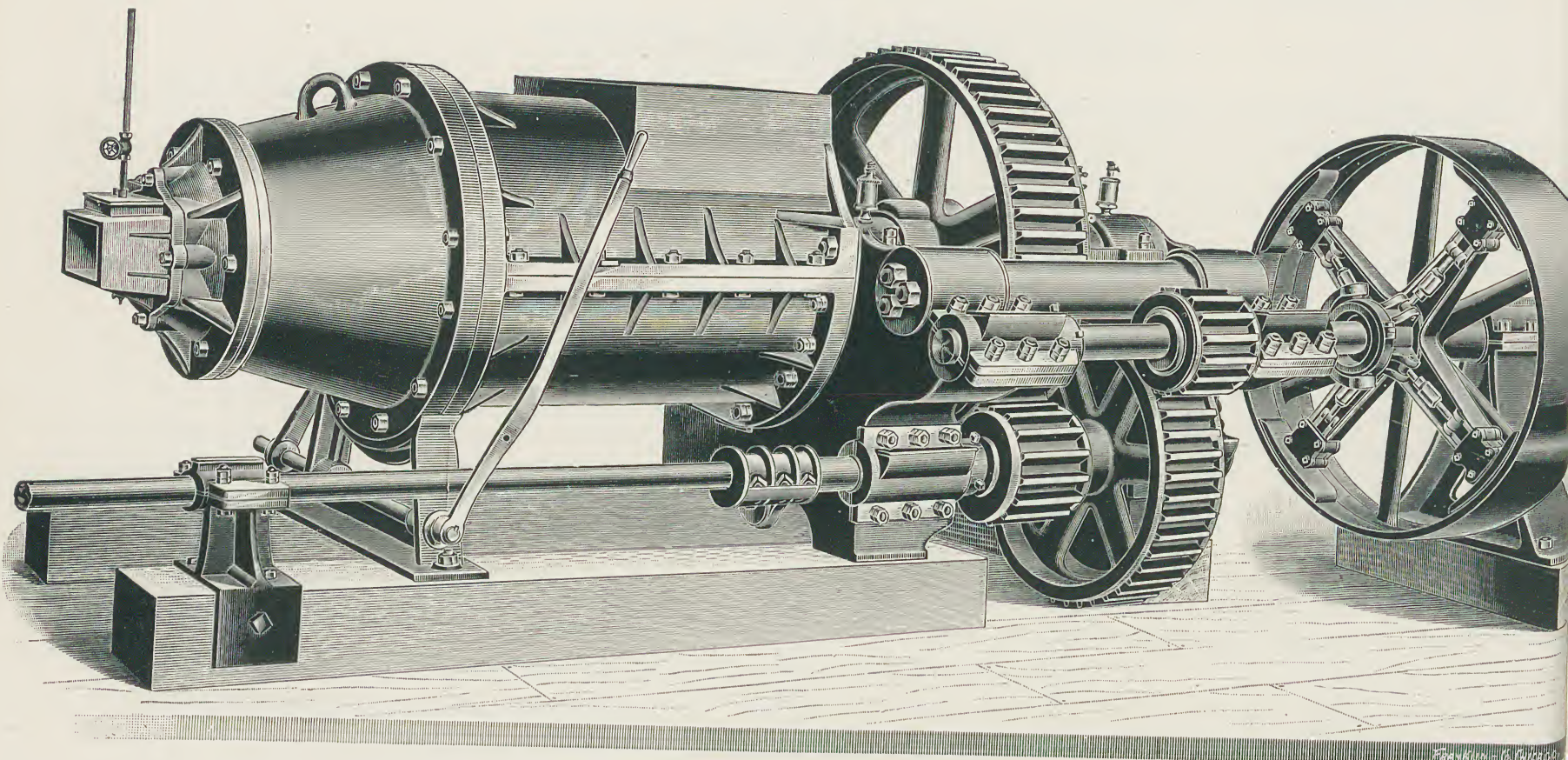
We furnish with every machine, either a lubricating or dry die, whichever may be best adapted to the material to be worked.

## CUT-OFF TABLES

We make a variety of different styles of cut-off tables, and can furnish either automatic or hand power cutters for either side-cut or end-cut brick.

## SANDER

When the machine is arranged for end-cut brick, a suitable sander is provided to sand the bar of clay on the bottom.



Special Giant Machine.



# SPECIAL GIANT MACHINE

## SHAFTING, GEARING, PULLEY AND SPEED

The shafting is made of forged steel.

The gearing is of latest design, extra heavy and strong.

The main spur wheel and spur pinion are 10-inch face and 12 inches over housings.

The intermediate gear and driving pinion are  $8\frac{1}{2}$ -inch face and  $10\frac{1}{4}$  inches over housings.

Both the intermediate and driving pinions are made of cast steel.

By having the gearing housed we secure from 25 to 35 per cent. more strength on the same size gear than on the ordinary plain gearing.

The machine is back-geared 12 to 1, giving a strong and easy motion.

The driving pulley is of friction-clutch pattern, 48 inches in diameter, 12-inch face. Speed, 300 revolutions per minute.

## CONCAVES, NOZZLE AND HINGE FRONT

The concaves are securely fastened to the front gear frame, the side and end flanges are planed and bolted to each other; the flanges are ribbed to the body. The opening in the top section is 24 inches by 24 inches.

The nozzle is planed on both ends and securely fastened to the concaves.

The front which receives the dies is also planed on both ends so as to make a perfect joint; it is secured to the nozzle with extra heavy cast-iron hinges, thus enabling the operator to clean the machine or remove the die readily.

The front end of the machine is supported with an extra long leg, which is bored out to fit the turned end of the concave and nozzle.

## GEAR FRAMES AND OUTER BEARING

The gear frames are made extra heavy so as to give surplus strength.

They are planed and fitted together nicely. Both bearings of the main shaft in the gear frames are 18 inches long. The bearings of the intermediate shaft are 14 inches long. The bearings of the driving shaft are 14 inches long.

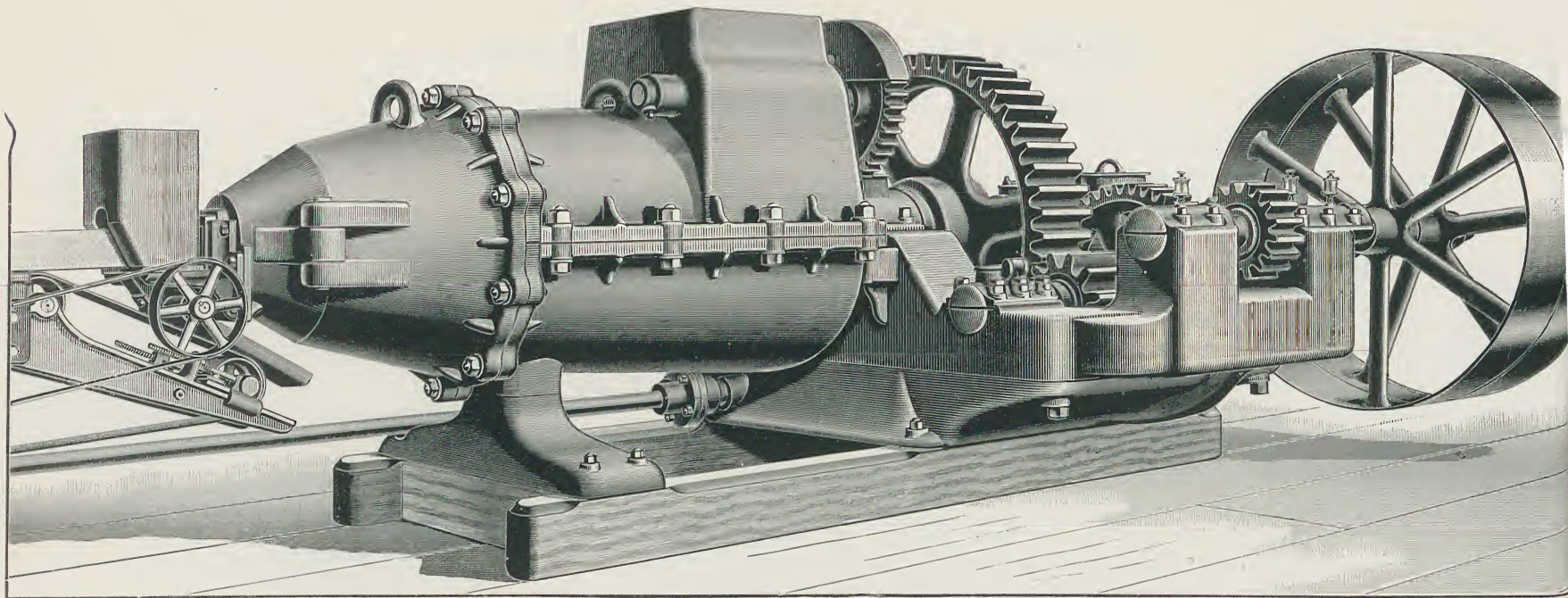
Over the chill thrust plates in the rear gear frame cap is placed a "Ballantine" Compression Grease Cup, insuring perfect lubrication at that point.

The caps to bearings are all planed to fit the frames nicely; the oil chambers in these caps are large and provided with suitable covers to exclude the dust. The outer end of the pulley shaft is provided with a substantial bearing, 14 inches long.

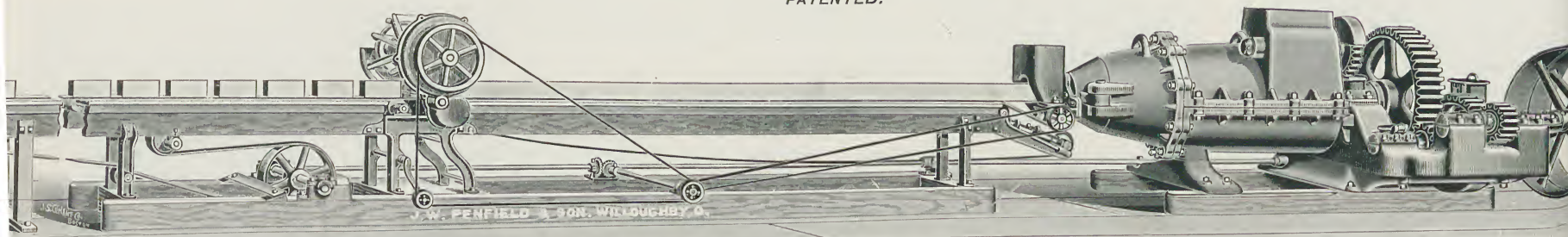
## CAPACITY AND WEIGHT

Capacity from 50,000 to 80,000 standard size brick per day of 10 hours, depending upon the quality of clay, temper and treatment.

Approximate weight, 20,000 pounds. Floor space 15 feet 6 inches by 8 feet.



No. 15 Auger Brick Machine.  
PATENTED.



No. 15 Auger Brick Machine, with Automatic Sander, End-cut Automatic Cutter and Separator.  
PATENTED.



# No. 15 AUGER BRICK MACHINE

## SHAFTING, GEARING AND SPEED

The shaft is of large diameter throughout. The gearing is of the most approved design, extra heavy and strong. The pinions are of cast steel. The machine is back geared 12 to 1, giving a strong and easy motion. The machine is provided with an Imperial Friction Clutch pulley 48 inches in diameter, 12-inch face, which should make about 300 revolutions per minute.

## SPECIAL KNIVES AND AUGER

The knives are forged of Norway iron, steel faced, securing all of the wearing advantages of steel knives, whereas should a stone or other foreign substance get between the knife and tub, the knife will bend instead of breaking and can be removed and re-straightened. The knives can be removed without taking out the shaft, and can be adjusted to any angle. They can also be adjusted to compensate for wear.

## CAPACITY

Under ordinary circumstances and with clay of average quality, the machine will produce 50,000 to 80,000 standard brick per ten hours, and can be operated with 75 horse-power engine. In some cases the capacity is greatly in excess of that above named. Frequently also less power may be required, but a surplus is always desirable for use in case of emergencies.

## OTHER DETAILS

The machine is provided with hinged front for convenience in cleaning or removing the die. As the hinged die front sustains the end pressure of the clay, it is secured by a safety device consisting of a link and pin. The pin is cut away where the link engages it so that in case the clay gets too dry, the pin will break allowing the hinged front to swing open, thus obviating danger of breakage of the machine. The machine is provided with a feed roller in the hopper so arranged that this hopper and knives on the main shaft revolve toward each other, catching the clay between them and assisting in feeding it through the machine. This device prevents accumulation or loading up of clay in the hopper and increases the capacity of the machine, especially in tough, lumpy or sticky clays or those which would have a tendency to work back.

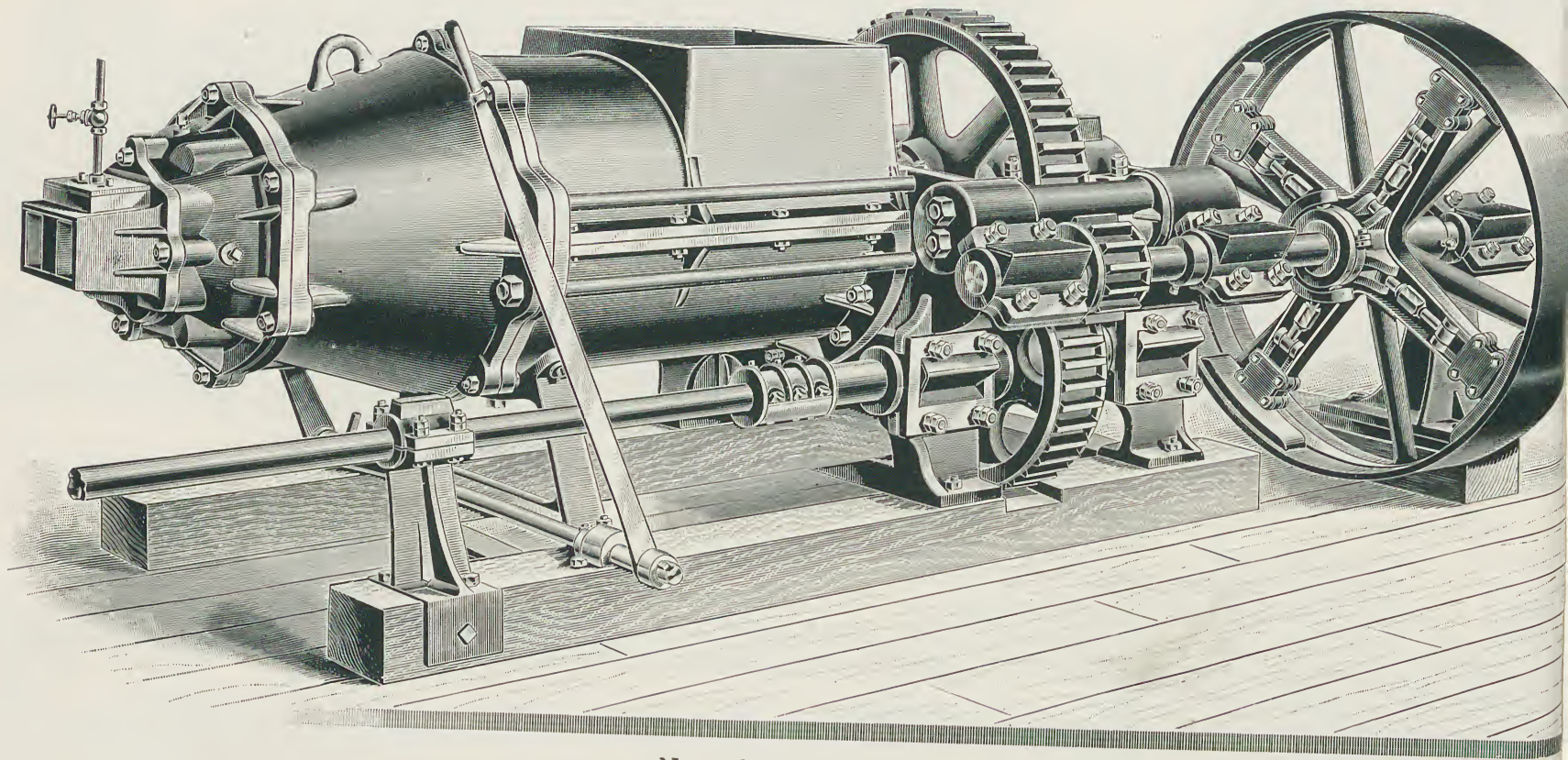
Height of machine, 5 feet. Length of sills, 9 feet 10 inches.

Length of machine to front of die, 14 feet 4 inches.

Width of base, 4 feet. Extreme width of machine, 8 feet 6 inches.

Approximate weight of machine, 20,000.





No. 1 Giant Machine.

# NO. 1 GIANT MACHINE

## SHAFTING, GEARING, PULLEY AND SPEED

The shafting is made of forged steel.

The gearing is of special design, extra strong and heavy.

The main spur wheel and spur pinion are  $6\frac{1}{2}$ -inch face, and 8 inches over housings.

The intermediate gear and driving pinion are  $5\frac{3}{4}$ -inch face and  $7\frac{1}{2}$  inches over housings. Both intermediate and driving pinions are made of cast steel.

By having the gearing housed we secure from 25 to 35 per cent. more strength on the same size gear than on ordinary plain gearing.

The machine is back geared 10.70 to 1, giving a very strong and easy motion. The driving pulley is of friction-clutch pattern, 48 inches in diameter, 12-inch face.

Speed, 225 revolutions per minute.

## CONCAVES, NOZZLE AND HINGE FRONT.

The concaves are planed on the side and end flanges and securely fastened to the front gear frame. The opening in the top section is 23 inches by 23 inches. The nozzle is planed on both ends and securely fastened to the concaves.

The front which receives the dies is also planed on both ends so as to make a perfect joint; it is secured to the nozzle with extra heavy cast-iron hinges, thus enabling the operator to clean the machine or remove the die at will.

## GEAR FRAMES AND OUTER BEARING

The gear frames are made extra strong. They are planed so as to make a perfect fit.

Both bearings of the main shaft in the gear frames are  $15\frac{1}{2}$  inches long.

The bearings for the intermediate shaft are 12 inches long. The bearings for the driving shaft are 12 inches long. The caps over the bearings are all properly fitted. The oil chambers in these caps are large and provided with suitable covers to exclude the dust.

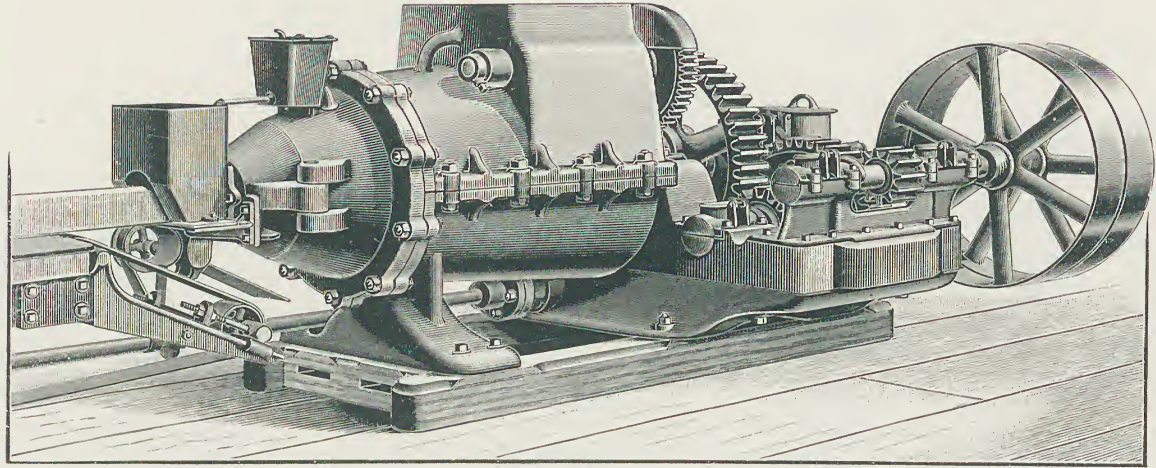
The outer end of the pulley shaft is provided with a good and substantial bearing 12 inches long.

## CAPACITY AND WEIGHT

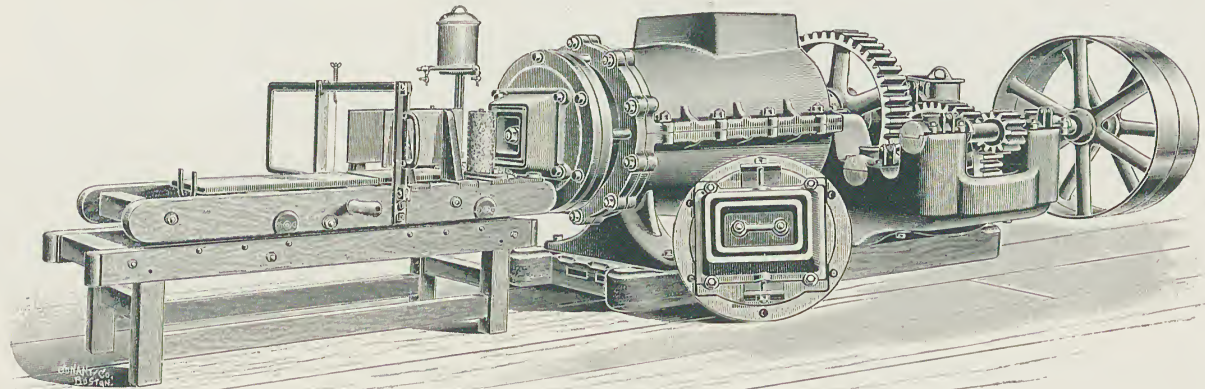
Capacity from 35,000 to 50,000 standard size brick per day of 10 hours, depending upon the quality of the clay, temper and treatment.

Weight, 12,000 pounds. Floor space, 12 feet by 7 feet.





No. 10 Auger Brick Machine, Spur Geared, Arranged for End-cut Brick.



No. 10 Auger Machine, Arranged for Hollow Ware.



# No. 10 AUGER BRICK MACHINE

PATENTED

## SHAFTING, GEARING, PULLEYS AND SPEED

The shafting is extra large, and the gearing powerful and of approved pattern. The pinions are cast steel. The machine is back geared  $10\frac{1}{2}$  to 1. The pulley is of Imperial Friction Clutch pattern, 36 inches in diameter, 8-inch face, and should make 280 to 300 revolutions per minute.

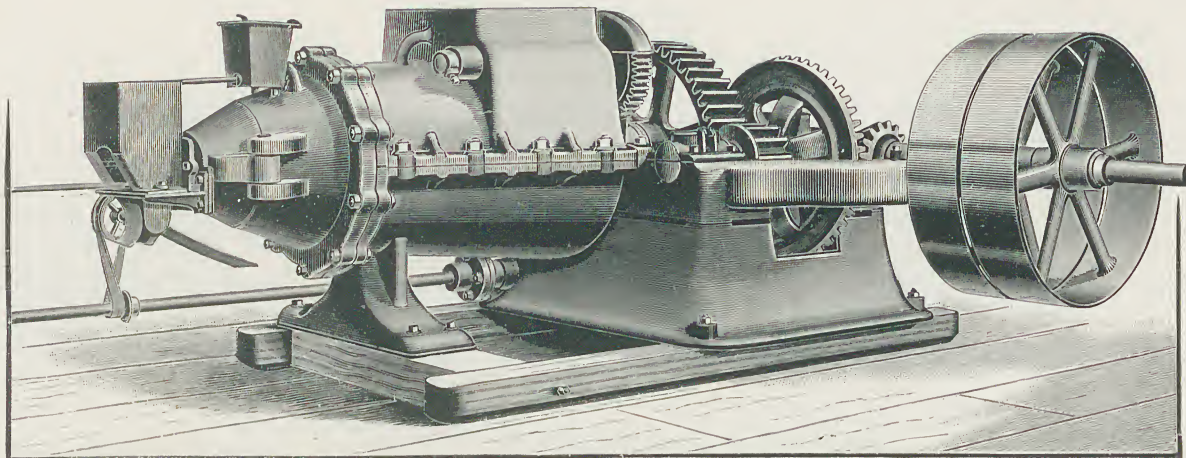
## CAPACITY AND POWER REQUIRED

Under ordinary circumstances and with clay of average quality, this machine has an easy working capacity of 30,000 to 40,000 end-cut or side-cut brick per 10 hours, and can be operated nicely with a fifty horse-power engine. In some cases less power will be required.

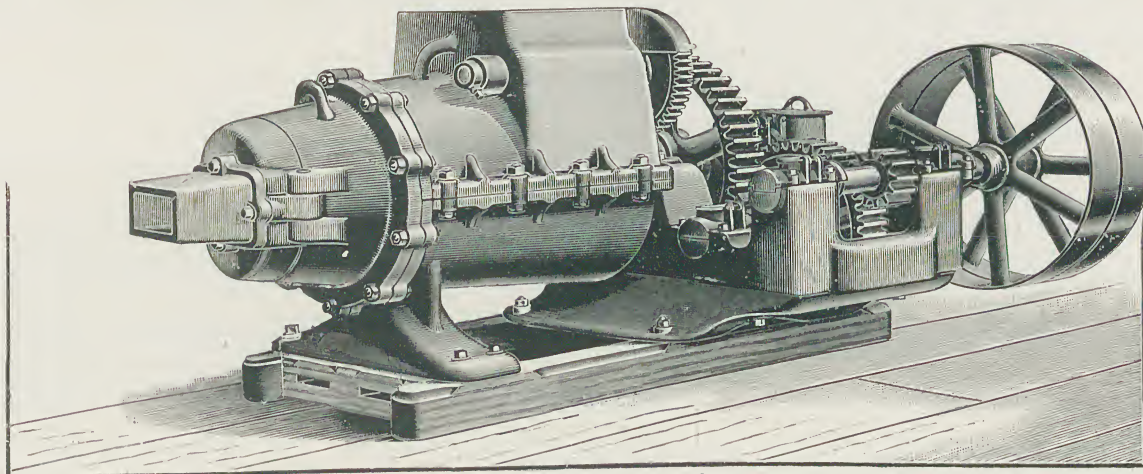
## OTHER DETAILS

The machine is built on the same plan throughout as the No. 15 Machine, and provided with hinged front, break pin, feed roller in the hopper, special steel-faced knives and chilled auger.

Height above sills.....	3' 6"
Length of sills.....	8'
Length of machine to die.....	11' 3"
Width of base.....	3'
Extreme width of machine.....	6' 5"
Weight.....	9,750 pounds.



No. 10 Auger Brick Machine, Bevel Geared, Arranged for End-cut Brick.



No. 10 Auger Brick Machine, Arranged for Side-cut Brick.



## No. 10 AUGER MACHINE, BEVEL GEARED

Where it is desirable, we can arrange this machine with bevel gearing, so that the pulley shaft extends at right angles to the body of the machine, as shown in the accompanying illustration. We can build the machine so that the pulley shaft extends on the side of the machine shown in the cut, or on the opposite side, as may be most advantageous.

This arrangement of the machine is suited to works where the line shafting is at right angles to the direction in which the bar of clay moves as it emerges from the die of the machine.

### DIMENSIONS OF BEVEL GEARED MACHINE

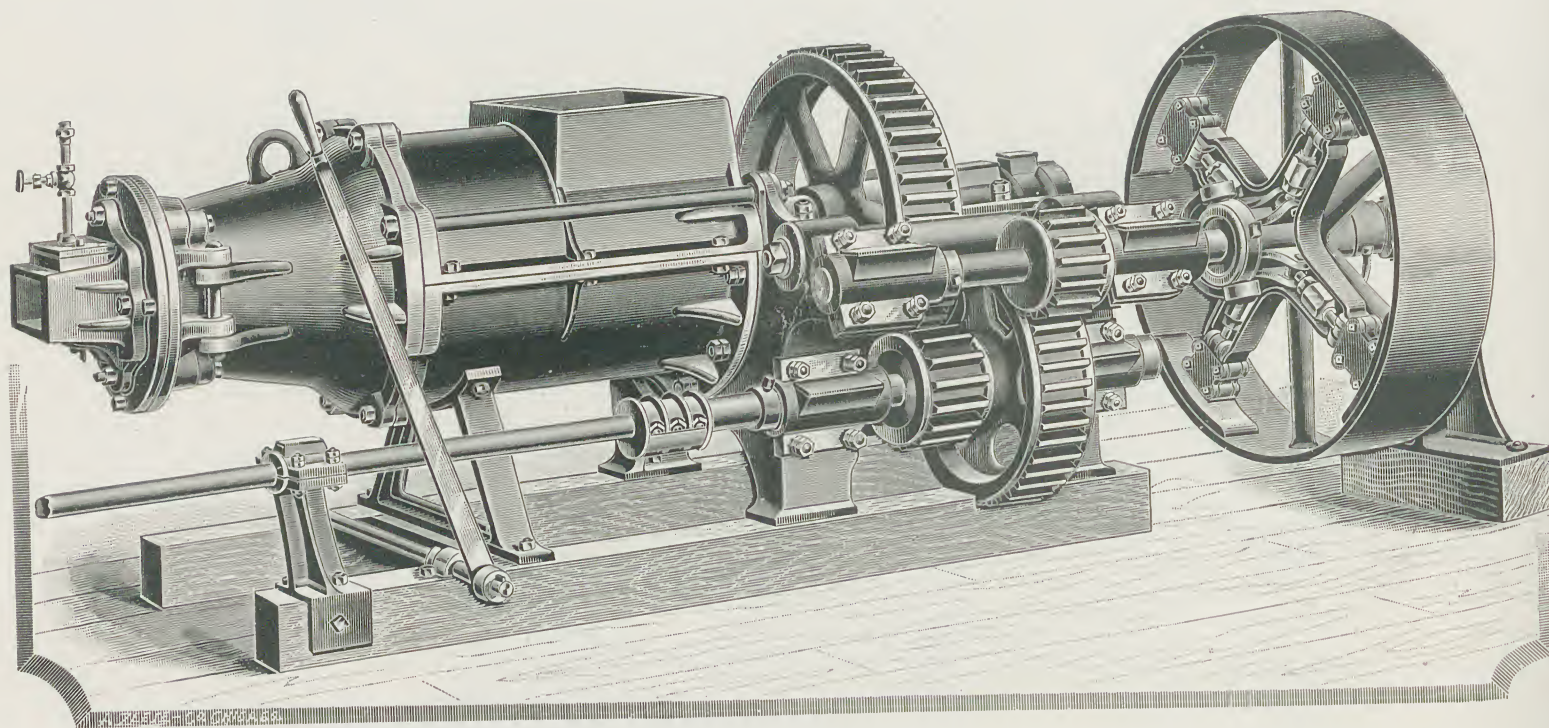
Height above sills.....	3' 9"
Length of sills .....	8' 4"
Length of machine to die.....	10'
Width of base.....	4' 10"
Extreme width of machine.....	9' 6"
Pulley, Imperial Friction Clutch.....	36" in diameter by 8" face
Speed.....	280 to 300 revolutions per minute
Weight.....	10,000 pounds

## THE No. 10 AUGER MACHINE

### FOR SIDE-CUT BRICK

Where the No. 10 machine is arranged for side-cut brick, it is provided with a special two-winged auger and with corresponding casing and hinged front especially adapted for the production of side-cut brick.

Where the machine is so arranged, it is provided with Automatic, Semi-Automatic or Board Delivery Cutter, as may be ordered.



No. 2 Giant Machine.



# No. 2 GIANT MACHINE

## SHAFTING, GEARING, PULLEY AND SPEED

The shafting is of forged steel.

The gearing is of special design, extra strong.

The main spur wheel and pinion are  $5\frac{3}{4}$ -inch face,  $7\frac{1}{4}$  inches over housings.

The intermediate gear and driving pinion are  $5\frac{1}{2}$ -inch face,  $6\frac{3}{4}$  inches over housings. Both intermediate and driving pinions are made of cast steel.

By having the gearing housed we secure from 25 to 35 per cent. more strength on the same size gear than on the ordinary plain gearing.

The machine is back geared 9.86 to 1, which gives a very strong and easy motion.

The driving pulley is of friction clutch pattern, 42 inches in diameter, 10-inch face.

Speed, 200 revolutions per minute.

## CONCAVES, NOZZLE AND HINGE FRONT

The concaves are planed on the side and end flanges and securely fastened to the front gear frame. The opening in the top section is 18 inches by 18 inches. The nozzle is planed on both ends and securely fastened to the concaves.

The front which receives the dies is also planed on both ends so as to make a perfect joint; it is secured to the nozzle with extra heavy cast-iron hinges, thus enabling the operator to clean the machine or remove the die at will.

## GEAR FRAMES AND OUTER BEARING

The gear frames are made extra strong. They are planed so as to make a perfect fit.

Both bearings of the main shaft in the gear frames are  $13\frac{1}{2}$  inches long.

The bearings for the intermediate and driving shafts are 12 inches long.

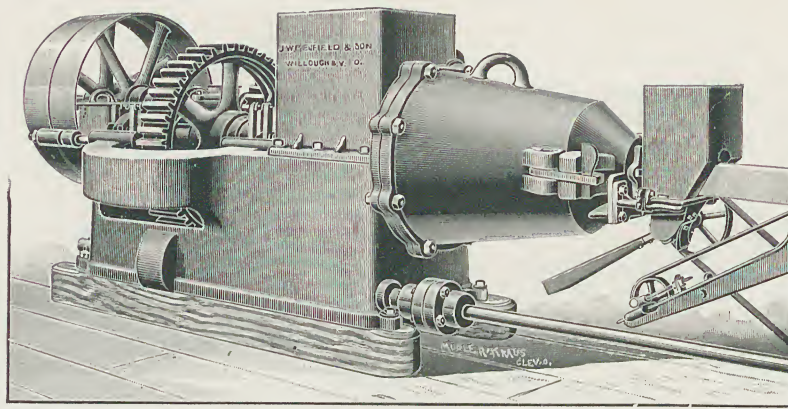
The caps over the bearings are all properly fitted. The oil chambers in these caps are large and provided with suitable covers to exclude the dust.

The outer end of the pulley shaft is provided with a good and substantial bearing 12 inches long.

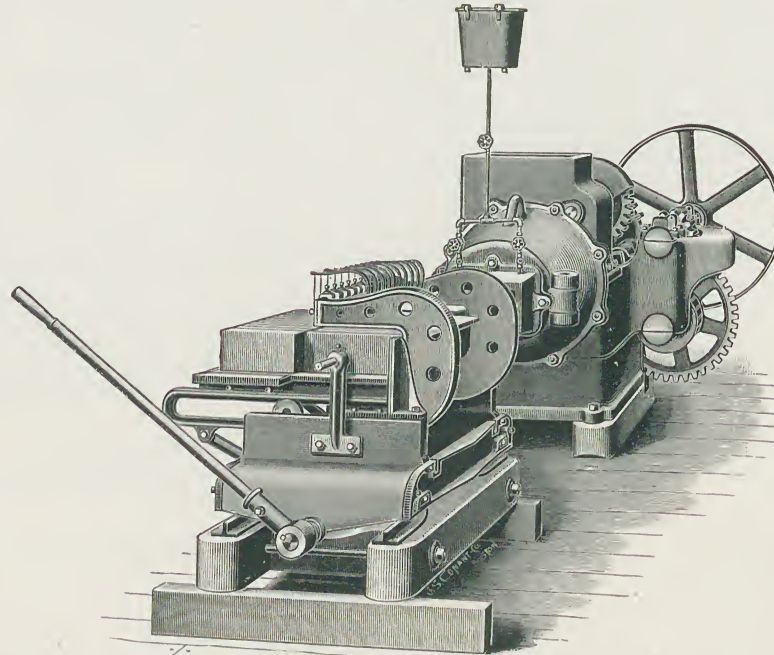
## CAPACITY AND WEIGHT

Capacity from 25,000 to 35,000 standard size brick per day of 10 hours, depending upon the quality of clay, temper and treatment.

Weight, 7,000 pounds. Floor space, 12 feet by 6 feet.



No. 8 Auger Brick Machine, with End-cut Die and Sander.  
*PATENTED.*



No. 8 Auger Brick Machine, Arranged for Side-cut Brick.



# THE No. 8 AUGER BRICK MACHINE

PATENTED

This machine is adapted for the use of parties desiring a strong, compact machine of medium capacity, suitable for producing side-cut or end-cut brick or drain tile.

## SHAFTING, GEARING, PULLEYS AND SPEED

The shafting and gearing are extra strong and powerful. The pinions are of steel. The machine is back geared  $10\frac{1}{2}$  to 1; pulleys 36 inches in diameter, 8 inch face; speed 200 to 300 revolutions per minute.

## CAPACITY

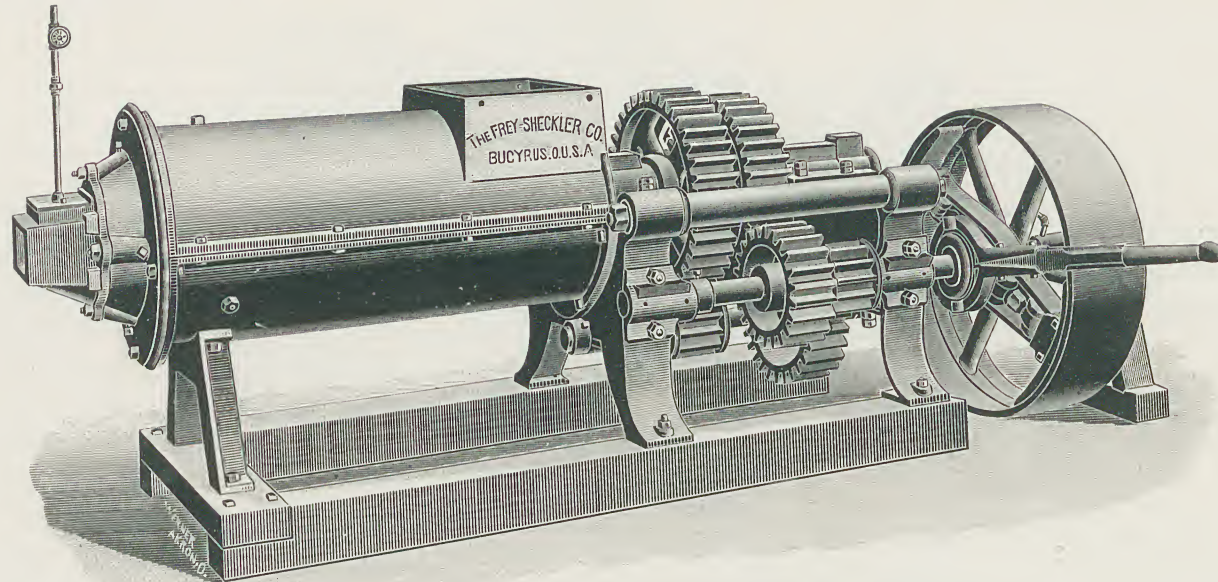
The capacity of any machine and the power required to operate it, depend, to a large extent, upon the clay used. Ordinarily with average clay, this machine will produce 25,000 to 30,000 brick per ten hours, and can be operated with 25 or 30 horse-power. In some cases less power will be required, but a surplus is always desirable.

## OTHER DETAILS

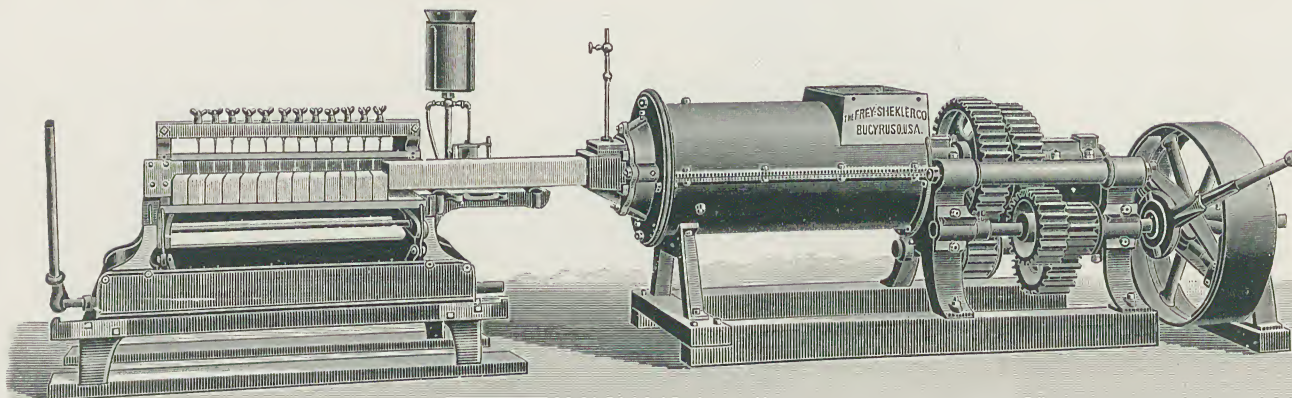
The machine is provided with hinged front, break pin, feed roller in the hopper, special knives and auger, etc., as previously described, and is a first-class machine throughout.

Extreme height.....	3' 10 $\frac{1}{2}$ "
Length of sills.....	5' 10"
Length of machine including die.....	12'
Width of base.....	2' 4"
Extreme width.....	4' 5"
Weight.....	6,860 lbs

When the machine is arranged for side-cut brick, it is provided with a special two-winged auger with casing and die front to correspond. Either a lubricating or a dry die can be furnished, depending upon the requirements of the clay. The machine can be equipped with an Automatic or Semi-Automatic Cutter and Off-Bearing Carriage, if desired; or with the Hand Power Board or Belt Delivery Table.



The Improved Centennial Machine.



Improved Centennial Machine with Board Delivery Table Arranged for Side-cut Brick.



# THE IMPROVED CENTENNIAL MACHINE

One of the many valuable features of this machine is its great pugging capacity.

Its great forte is in making a larger variety of work of superior quality than any other machine.

## SHAFTING, KNIVES AND PROPELLERS

This machine is provided with two steel mixing shafts, which revolve in opposite directions, one running five revolutions to one revolution of the other.

The mixing shaft on which the tempering knives are attached, is hollow, and the propeller shaft passes through it with a propeller attached on the outer end; by this method complete pugging is assured, also the very best quality of ware produced.

## GEARING, PULLEY AND SPEED

The gearing is of our latest pattern; having 6-inch face.

The driving pulley is of improved friction clutch pattern, 48 inches in diameter, 10-inch face.

Speed, 100 revolutions per minute.

## CONCAVES, FRAME AND OUTER BEARING

The concaves are planed on the side and end flanges and securely fastened to the front gear frame. The opening in the top section is 15 by 17 inches.

The gear frames are made extra strong. They are planed so as to make a perfect fit.

Both bearings of the main shaft in the gear frames are  $10\frac{1}{2}$  inches long.

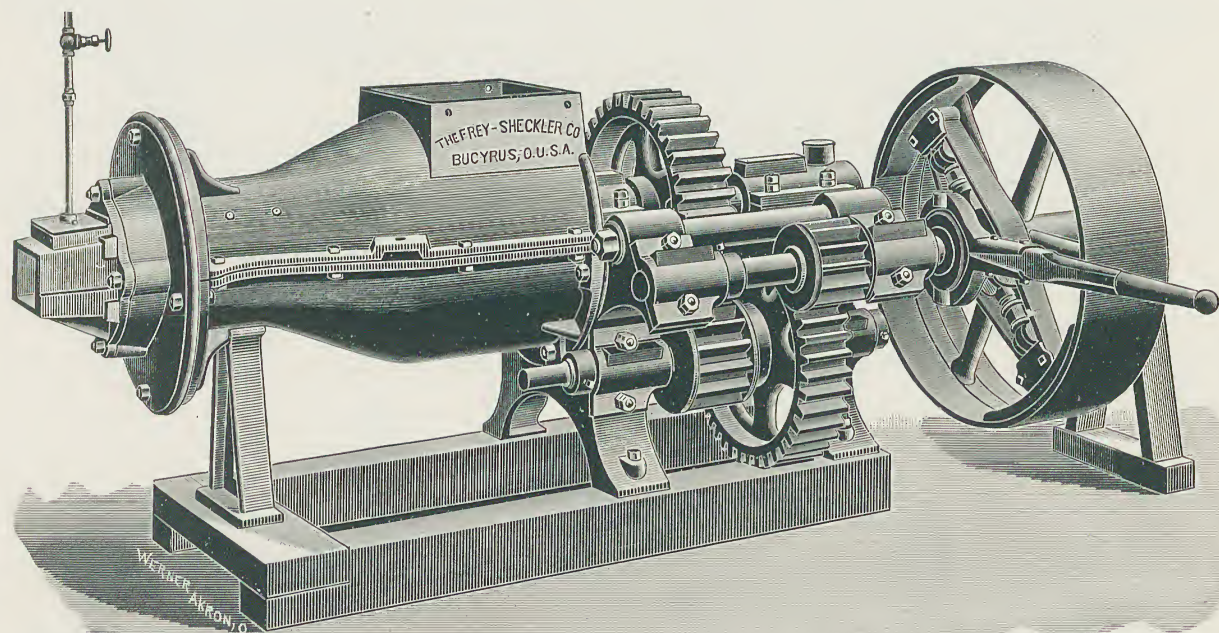
The bearings for the intermediate and driving shafts are 8 inches long.

The caps over the bearings are all properly fitted and supplied with oil chambers with covers to exclude the dust.

The outer end of the pulley shaft is provided with a bearing 8 inches long.

Capacity from 15,000 to 20,000 standard size brick per day, depending upon the condition of the clay.

Weight, 4,200 pounds. Floor space, 11 feet by 4 feet 6 inches.



Improved Acme Machine.



# THE IMPROVED ACME MACHINE

## SHAFTING, GEARING, PULLEY AND SPEED

The shafting is of steel.

The gearing is of new and heavy design.

The main spur gear and pinion are 6-inch face.

The intermediate spur gear and driving pinion are  $5\frac{1}{4}$ -inch face.

The machine is back geared 8.55 to 1.

The driving pulley is of improved friction clutch pattern, 36 inches in diameter, 10-inch face.

Speed, 200 to 225 revolutions per minute.

## CONCAVES, FRAMES AND OUTER BEARING

The tub sections are planed on the side and end flanges and securely fastened to the front gear frame. The opening in the top section is 15 by 17 inches.

The gear frames are made extra strong. They are planed so as to make a perfect fit.

Both bearings of the main shaft in the gear frames are  $10\frac{1}{2}$  inches long.

The bearings for the intermediate and driving shafts are 8 inches long.

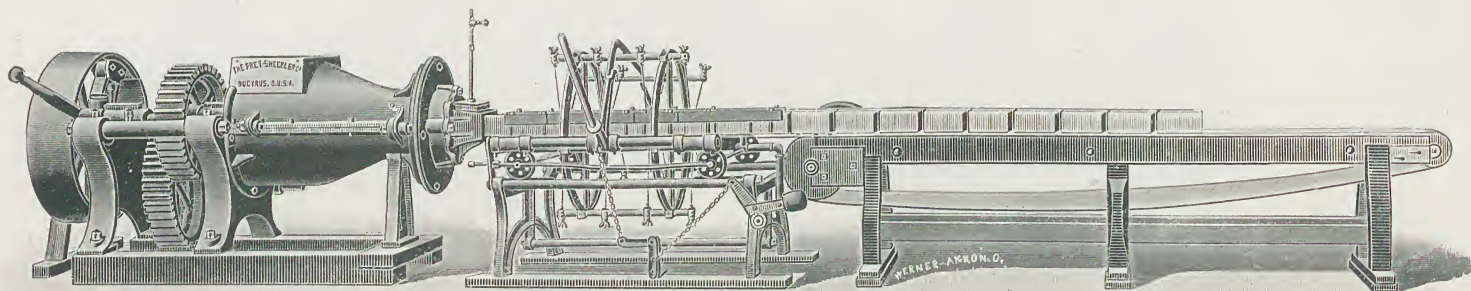
The caps over the bearings are all properly fitted and supplied with oil chambers with covers to exclude the dust.

The outer end of the pulley shaft is provided with a bearing 8 inches long.

## CAPACITY AND WEIGHT

Capacity from 20,000 to 30,000 standard size brick per day of 10 hours, depending upon the condition of the clay.

Weight, 4,000 pounds. Floor space, 10 feet by 4 feet 6 inches.



The Improved Acme Machine with Galesburg End-cut Table.



# THE IMPROVED ACME MACHINE WITH GALESBURG END-CUT TABLE

The Galesburg Table has been on the market for a number of years, and has met with flattering success. It is especially designed for end-cut brick. One ordinary man can cut from 50,000 to 70,000 brick per day without overwork or special skill.

## TABLE AND CUTTING DEVICE

The carriage is mounted on the base of the table on four grooved wheels which are 6 inches in diameter and which render the motion of the table very easy and accurate. The cutting is done by wires suspended around a central point, and the movement of the wires is controlled by a lever in the center of the table and at right angles with the column of clay.

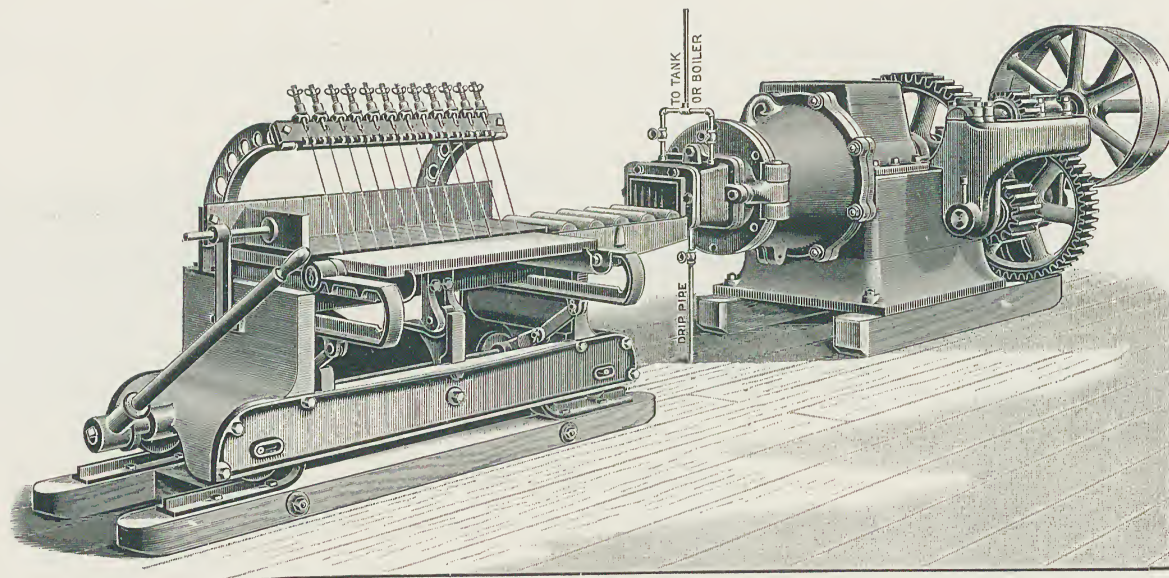
One downward motion of the lever brings one set of wires through the column of clay, cutting six bricks of the required length. As the cut is being made the table travels with the column of clay, the upward movement of the lever brings the table back to the machine ready for the next cut.

## OFF-BEARING BELT

The off-bearing belt at the rear end of the Cutting Table is driven from the machine, and as the brick are cut the travel of the column of clay moves the brick (already cut) on to the off-bearing belt, and as it is moving faster than the clay, this difference in speed separates the brick and makes it convenient for the off-bearer for removal to off-bearing trucks or drying cars.

The Machine, Cutting Table and Off-bearing Belt 10 feet long, will occupy a floor space of 26 feet by 5 feet.

Weight, as per illustration, 5,300 pounds. Any of our cutting tables can be used in connection with the Acme Machine.



No. 6 Auger Brick Machine and No. 8 Down-cutting Board Delivery Table.

PATENTED.



# THE No. 6 AUGER BRICK MACHINE

This machine is suited for the manufacture of either side-cut brick or drain tile. It is constructed on the same general principle as the No. 8 machine, but is smaller and of less capacity.

## SHAFTING, PULLEYS, GEARING AND SPEED

The shafting is extra large, and the gearing powerful. The pinions are of steel. The machine is back-gearred 10 to 1. The pulleys are 18 inches in diameter by 6-inch face, and should make from 200 to 250 revolutions per minute, according to the capacity desired.

## CAPACITY

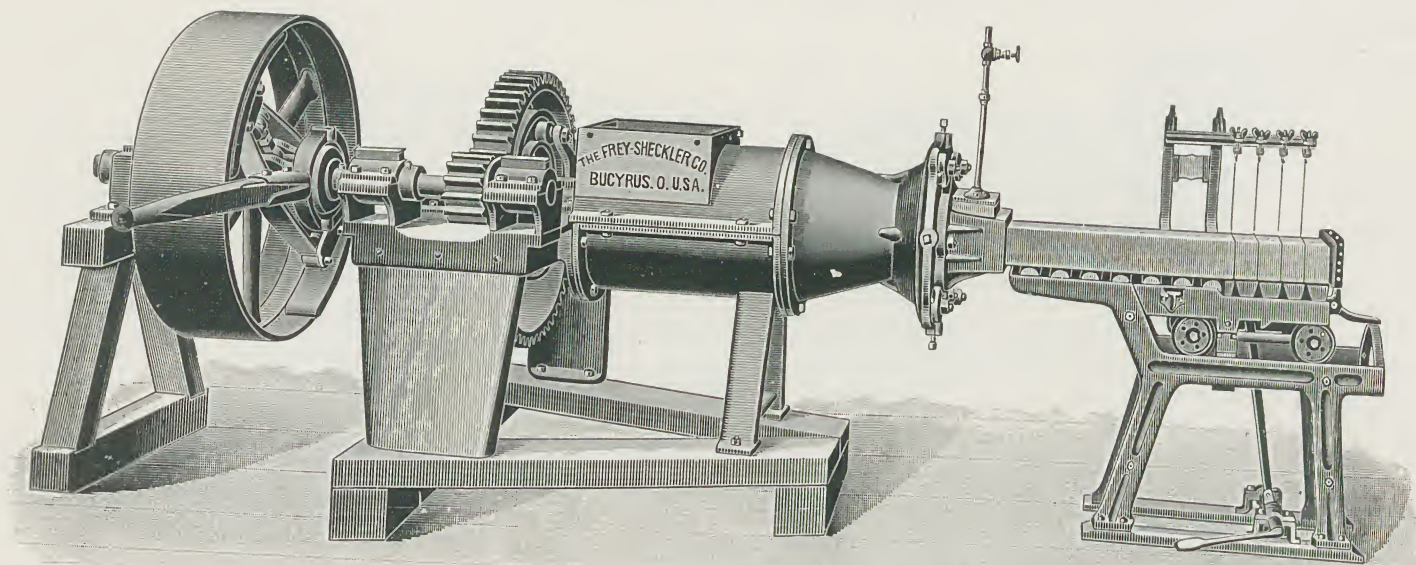
The capacity of the machine and the power required to operate it varies in different clays. Ordinarily, with clay of average quality, the machine will produce from 15,000 to 20,000 brick per ten hours, and can be operated with 15 to 20 horse-power.

## OTHER DETAILS

The machine is provided with hinged front, break-pin, adjustable steel-faced, wrought iron knives, and white metal auger nicely ground and polished. Either the No. 5 or No. 8 Board Delivery Cutters, or the Semi-Automatic Power Cutters can be used in connection with it.

## DIMENSIONS

Length of sills, 5 feet 6 inches; width of base, 2 feet 8 inches; extreme length of machine, 8 feet; extreme width of machine, 4 feet; height, 3 feet 5 inches. Weight, 4,900 pounds.



Mascot Brick Machine with Daisy Cutting Table.

# THE MASCOT MACHINE WITH DAISY CUTTING-TABLE

This machine is admirably adapted to meet the requirements of persons having light power and desiring to operate a factory on a small scale. While embracing the essential features of the larger machines, it is smaller and of less capacity.

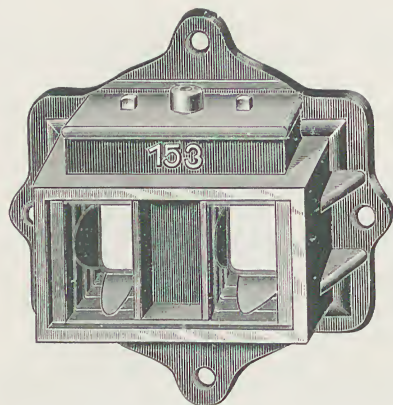
To run the machine to its full capacity, will require about 15-horse power, depending upon the nature of the clay. The Mascot is adapted to the manufacture of tile from 2 inches to and including 10 inches in diameter; brick from 10,000 to 15,000 per day of 10 hours, depending upon the kind and condition of the clay. It is also well adapted for manufacturing hollow building blocks. Speed, 180 revolutions per minute; friction clutch pulley 36 inches by 10 inches.

## THE DAISY CUTTING-TABLE

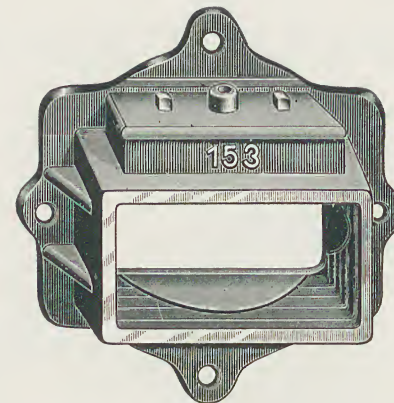
Although this Table is quite small, and as only four brick are cut at a time, it is well adapted for cutting from 15,000 to 20,000 brick in 10 hours. One of its many good features is its "down cut," thereby leaving the brick with smooth edges. The abutment plate is hinged. After the cut is made the table is moved back, which releases the abutment plate, allowing it to fall back out of the way in removing the brick, which is done before the cutting frame is raised. In its construction large wheels are used to reduce resistance. A counter weight is attached to the cutting frame which accelerates the cutting of brick. The Daisy can be used for cutting end and double wedges if desired. It is only intended for side-cut brick. The Mascot Machine and the Daisy Cutting-Table, combined, occupy a floor space 4 feet by 13 feet. Combined weight, 2,650 pounds.

Any of our cutting-tables can be used in connection with the Mascot Machine.

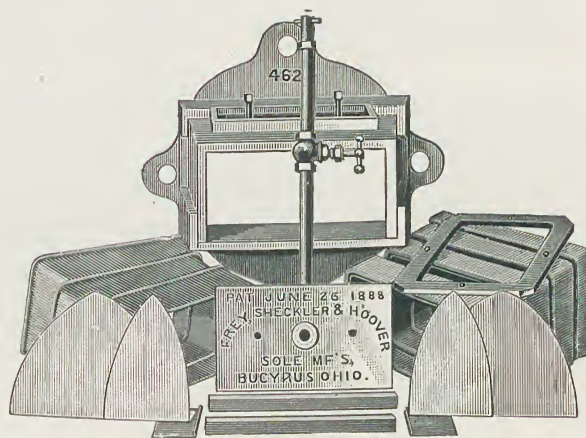




End-Cut.



Side-Cut.



Parts of Die in Detail.

Niedergesaess Patent Lubricating Brick Dies.

## LUBRICATING BRICK DIES

The Neidergesaess Patent Lubricating Die is shown on the preceding page. No. 462 is the casing proper, which bolts to the machine and contains all the parts shown below it. On the top of this casing two bolts are shown sticking out of the water reservoir, which is provided with channels and holes in the bottom to conduct the lubricating fluid or steam through the various channels. The bolts fasten the lettered plate, represented in the foreground, on the reservoir. The hole in the center of the plate is to receive the connecting pipe with valve, also given in cut, which may either lead to the boiler or a water tank, OR IF USED FOR RE-PRESSING, TO AN OIL RESERVOIR. On the right are shown four cast frames having channels around the edges of them. The left shows the sheet steel liners, which fit over each frame. In the immediate front, four sheet steel plates are shown. These fit into the first frame and make the sharp corners on the brick. When round corners are desired, these are replaced by a liner similar to those on the left.

The four round edged plates in the foreground are termed the aprons, and are put in last over all the liners. The whole is held in by the frame represented on top of the frame on the right. Proper packing, cement or putty, is used to prevent leakage.

### LUBRICATING DEVICE

The duties of the aprons are two-fold: to prevent the wearing of the liners and to exclude the lubricant where not wanted, so as to insure an even flow. It is highly necessary that only clean fluid is used, as otherwise the channels will stop up and make the die inefficient. It is well to have a thin-bladed knife to put under the liners occasionally, so as to keep them open for the fluid to emerge and come in contact with the clay as it passes through. For some clays dry steam answers the purpose better than either water or oil. Weight, 80 pounds.

### AMERICAN LUBRICATING BRICK DIE

This is a very effective Die, composed of a suitable cast-iron casing, into which fit a series of cast-iron liners or scales. The water, steam or oil passes between the scales, thoroughly and evenly lubricating the bar of clay. This die is at once simple in construction, easy to understand and operate, and successful in performance.

# AUTOMATIC BRICK CUTTER AND SEPARATOR

## STYLE "P" FOR END-CUT BRICK

PATENTED

THE MANNER OF CONSTRUCTION AND OPERATION IS AS FOLLOWS

### CARRIAGE

The Carriage, provided with suitable rubber apron, is made in two sections. The section adjacent to the machine is arranged with revolving reel and self-adjusting wire holders, and the second section runs at greater speed and performs the separating of the bricks.

### CUTTING THE BAR OF CLAY

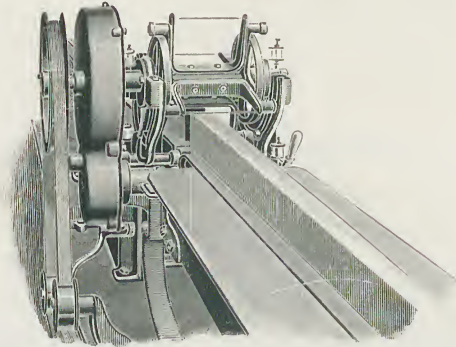


Fig. A. Style "P," 4-Wire Automatic Brick Cutter

As the bar of clay emerges from the die of the brick machine, it travels upon the apron of the carriage until it encounters this wire-strut reel (see Fig. A), which revolves at proper speed, cutting it into brick of uniform length.

### A STRAIGHT CUT, HOW SECURED

As the bar of clay is cut while in continuous motion, if the wires moved straight down, an angling cut would be the result; consequently



the cut-off is so constructed that the adjustable wireholders, while making the cut, travel in irregular cam tracks (see Fig. B), moving the wires in the proper direction (horizontally and vertically), to compensate for the travel of the bar of clay and ensure a straight, even cut.

### DRIVING THE CUTTING REEL

The speed of the cutter must conform to the speed of the bar of clay, for if the wire-strung reel revolved proportionately slower or faster, the bar of clay would be apt to kink or separate, and the brick would be cut in irregular lengths. Furthermore, it would be manifestly impracticable to propel the reel entirely by the power the moving bar of clay would exert, as the work would be so great as to cause the clay bar to buckle and kink.

We, therefore, provide an independent, auxiliary, reel-driving belt, the tension of which can be quickly adjusted by means of the lever on the opposite side of the cutter. The tension of the auxiliary belt is regulated so as to furnish nearly enough power to do the cutting. The

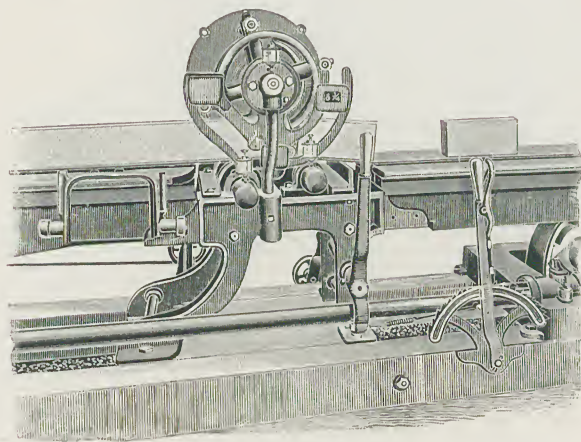


Fig. B. Style "P" 4-Wire Automatic Brick Cutter

balance of the power required is furnished by the moving bar of clay, which thus regulates the speed of the reel and secures uniform cutting. The resistance caused by the weight of the bar of clay and the work it has to perform is just sufficient to slightly retard the flow of clay through the brick machine die a trifle, allowing the corners of the clay bar to fill out nicely and secure nice, square, smooth brick.

### SEPARATING THE BRICK

The apron on the second section of the carriage runs at increased speed; consequently, as the brick are cut off and pass upon it, it sepa-

rates them so that they can be lifted from the apron by the ends (see Fig. C). Each brick is pulled away from the wire as soon as the cutting is completed, so that the wire in its return from cutting position cannot catch or clip the brick. The bricks are separated far enough apart so that each one can be lifted from the apron, without danger of the operator touching or marring other bricks in the operation.

### BRICK CUT ON EDGE

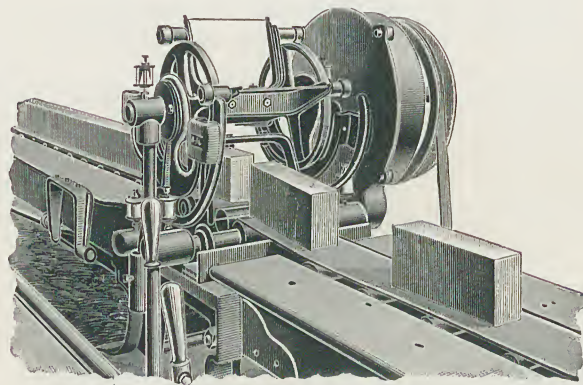


Fig. C. Style "P" 4-Wire Automatic Brick Cutter

The bricks travel on edge upon their narrow surface or edge; consequently, if the descending wire should strike a stone in the bar of clay causing it to deflect, the irregularity in cut would not be apparent at the top or face of the brick where the cut was commenced. This is a decided advantage over devices which cut the brick while running on the broad side, as any such irregularity would then be plainly noticeable in the face of the brick. Our method also leaves the brick in most convenient position for quickly removing and handling, requiring no additional fixtures for placing the brick on edge.

### WIRE BOWS

The wire bows are provided with springs, giving tension to the wires and holding them tight. Should a wire break, the bow can be quickly removed and the wire replaced, without stopping the machinery.

### SANDER

In connection with the Automatic Cutter for end-cut brick, is provided an Automatic Sanding Device just in front of the brick machine. The sander evenly and uniformly sands the bottom of the bar of clay as it emerges from the die, obviating all liability of its sticking to the off-bearing belts, and permitting the hacking of the bricks as they come from the machine, without danger of adhering together.

## LENGTH OF SEPARATING CARRIAGE

The separating carriage can be made of any desired length to secure convenience in handling the brick, delivering them adjacent to the drying racks or dryer. In one factory, after the brick are cut off and separated, they are automatically delivered upon a transverse belt running at right angles to the automatic cutter, and delivering the brick at a distant portion of the yard. In some establishments adjoining rail-

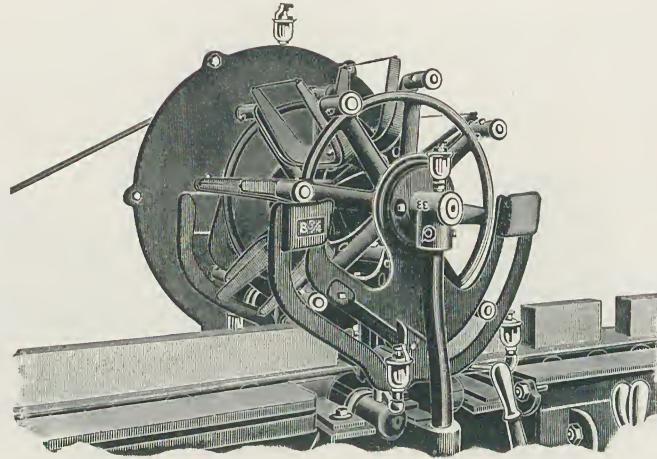


Fig. D. Style "P" 8-Wire Automatic Brick Cutter

roads, where the brick-making plant is on one side of the track and the dryer and kilns on the other side, a tunnel is constructed under the track and the separating carriage extended through it, conveying the brick to the desired point.

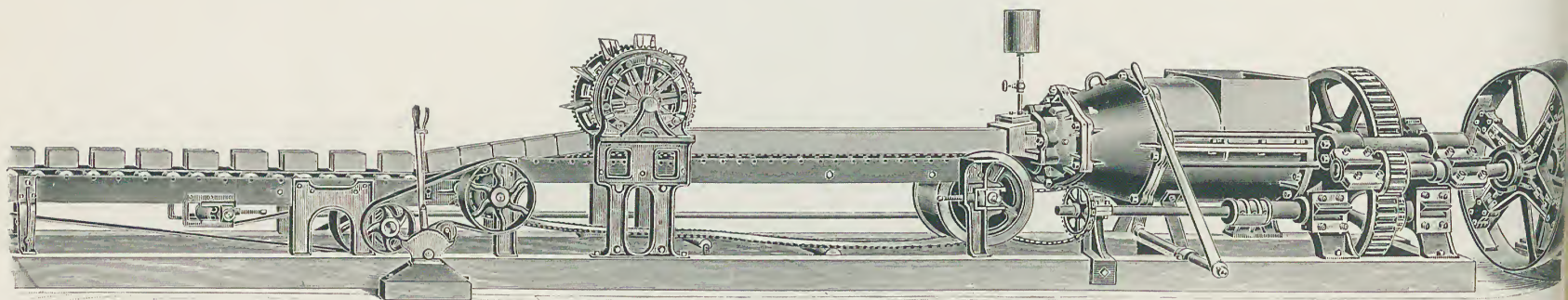
## SIZES

We make two sizes of the Style "P" Automatic Cutter, provided, respectively, with eight and four wires.

Weight of 8 wire cutter.....3,800 pounds

Weight of 4 wire cutter.....2,750 pounds





Style "F," Automatic Brick Cutter and Separator, for End-Cut Brick.

*PATENTED.*

# AUTOMATIC BRICK CUTTER AND SEPARATOR

FOR END-CUT BRICK. Style "F"

PATENTED

**CONSTRUCTION AND OPERATION.**—The table is made into two sections and provided with rubber aprons of suitable width to accommodate the brick. The section adjacent the Brick Machine is arranged with a reel and self-adjusting wire holders, and the outer section or off-bearing table, which runs at an increased speed, separates the brick so as to be taken away without being marred by the operator.

**CUTTING THE TWO BARS OF CLAY.**—As the two bars of clay emerge from the two-stream brick machine die, they come in contact with the reel, on which the cutting wires are suspended, severing the two bars of clay into brick of the required length.

## THE CUTTING REEL AND AUXILIARY POWER

At a proper determined place in the region of the carrier belt adjacent to the brick machine is a frame on which is mounted box supports, carrying the bearings, to which is fixed the cutting wheel or reel.

The end-pieces of this cutting reel have formed in them radially arranged ways or slots in which are the sliding wire frames, having arms to which the wires are attached, and between which the clay from the machine moves.

The cam is so arranged to concentric to the axis of the cutting wheel to opposite points below the axis from where the race extends horizontally with a slight depression and curves with its lowest point. The cam is thus formed to carry the wire frames down straight through the moving column of clay with a straight cut, and is also designed to lift the frames after the brick or form is severed without scraping or marring the faces of the brick.

In soft and easily yielding clays the cutting mechanism may be operated by the action of the moving column of clay on the apron of the cutting table, but the tendency is to work the clay somewhat stiff. This clay body has a tendency to retard at the cutting table, and requires additional power to make a positive and even cut.

To give this power, and to impart a positive movement to the carrying-off belt, we employ auxiliary belt power.

To adjust the tension of the belt to do its work with certainty, a lever handle is fixed to work in connection with a pawl or ratchet adjustment.

## SEPARATING THE BRICK

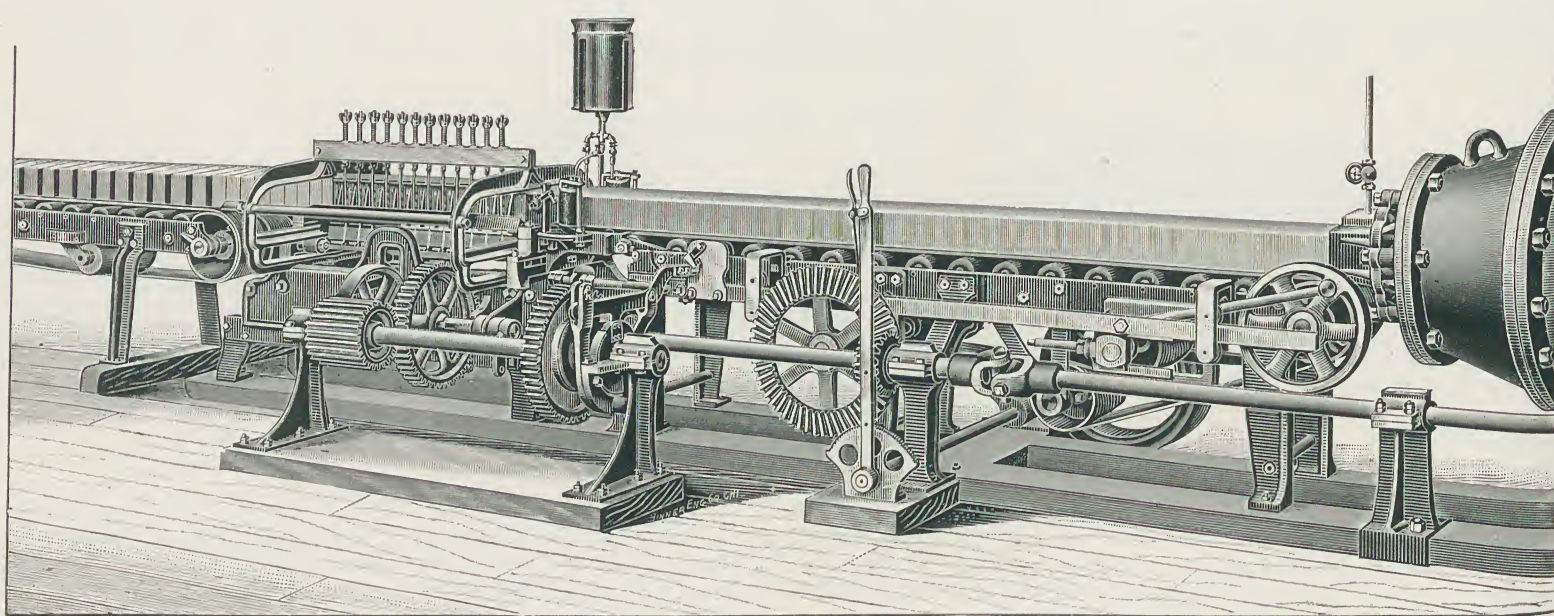
The adjustment of the auxiliary mechanism for moving the aprons of the respective tables is such that it will move the aprons of the cutting-table at the same rate as the movement of the two columns of clay thereon, and the apron of the carrying-off table is moved faster than the apron on the cutting-table. The brick, or forms, by this arrangement, will then be separated or carried apart at the point of leaving the cutting-table and taken upon the carrying-off belt.

## SANDER

On the end of the cutting table adjacent to the Brick Machine is mounted the sanding mechanism (not shown in cut).

The sander distributes evenly the sand on the bottom of the bars of clay, thereby obviating the liability of the clay adhering to the carrying-off belt.

The carrying-off belt can be made any desired length. Weight of Cutter, 4,000 lbs.



Automatic Cutter and Separator for Side-Cut Brick. Style "F."

PATENTED.



# AUTOMATIC CUTTER AND SEPARATOR

FOR SIDE-CUT BRICK. Style "F"

*PATENTED*

We show herewith a cut of our Improved Automatic Side-Cut Table. It is a remarkable piece of mechanism, strictly automatic in operation. The brick are cut accurately and rapidly.

The section next to the Brick Machine is called the measuring table. The outer section is called an off-bearing table or Separator. The cutting mechanism is placed between these two tables.

## CUTTING DEVICE

The Cutting Device is so constructed as to move the cutting wires into the column of clay from each side, alternately, severing the bar of clay into brick of the required thickness. While the cutting-table is engaged in making the cut from either side of the column of clay, it travels with the flow of the bar of clay, at the same rate of speed, so as to make a perfect rectangular cut. As soon as the cut is made the cutting device is thrown out of motion by our improved gear clutch.

The cutting frame is then brought back mechanically to its former position, prepared for repeating the operation.

## SEPARATING DEVICE

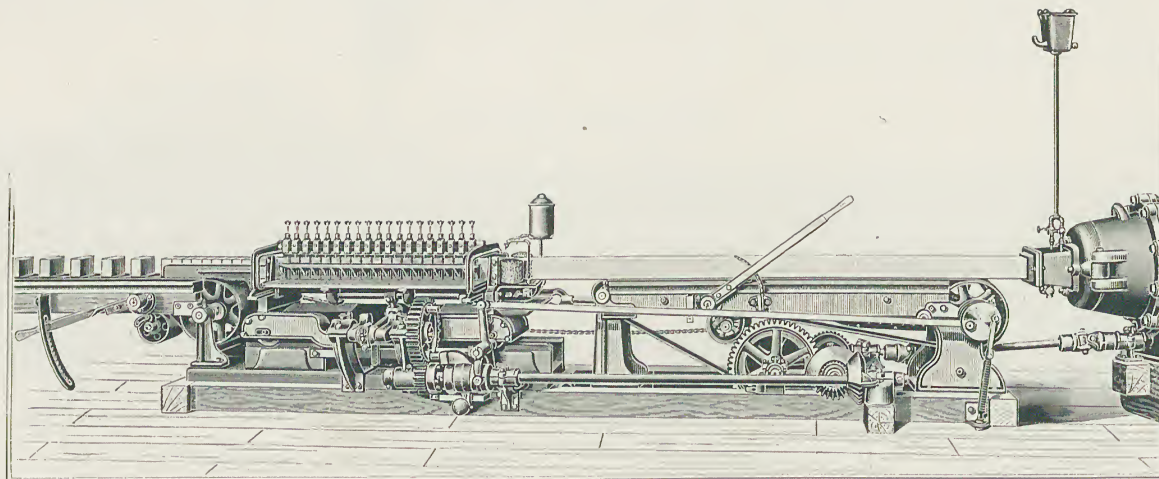
When the brick are cut, they are then carried to the off-bearing section, driven by sprocket wheels and chain, which is run at a greater speed than the bar of clay, thus separating the brick for the convenience of the off-bearer in handling them to the drying cars.

This machine is also supplied with a friction device for applying auxiliary power for regulating the moving column of clay.

## CAPACITY AND WEIGHT

The capacity of this table is from 50,000 to 100,000 standard size brick per day.

Weight of table complete, including measuring and off-bearing table (the latter 18 feet long), 5,100 lbs.



Automatic Cutter and Separator for Side-Cut Brick. Style "P."

*PATENTED AND PATENTS PENDING.*

# AUTOMATIC CUTTER FOR SIDE-CUT BRICK, STYLE "P"

PATENTED

The operation of this Automatic Cutter for side-cut brick, is substantially the same as our Style "F" Automatic Side-Cut Cutter (see pages 68-69), although the mechanism for operating the measuring, cutting and separating devices differ in a number of details. The cutter is perfectly automatic in operation, and thoroughly efficient, accurate and reliable.

## SEPARATING DEVICE

The apron on the section of the carriage farthest from the machine is driven by sprocket wheel and chain, and runs faster than the bar of clay, consequently as the brick are forced onto it by the moving bar of clay, they are at once separated, affording greater convenience in handling.

## AUXILIARY POWER DEVICE

The section of the carriage next to the machine is provided with a friction device, transmitting an amount of power a little short of that required to drive the cutting mechanism. The balance of the power required is furnished by the moving bar of clay, which thus controls and regulates the operation of the cutter. By means of a lever, the amount of friction upon the apron can be arranged to correspond to the movement of the bar of clay and the power exerted by it.

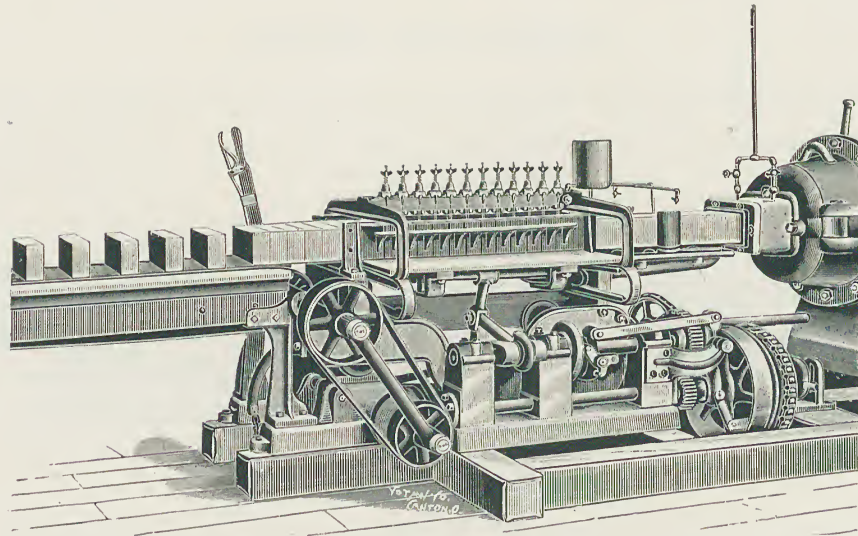
## LUBRICATING THE CLAY BAR

The bar of clay as it passes on the metal table of the cut-off section is lubricated at both the bottom and sides by means of covered oil rollers, preventing the bar of clay from adhering to the metal table.

## CAPACITY

This Cutter is capable of cutting and separating 60,000 or over of side-cut brick per ten hours. Weight 5,600 pounds.





Semi-Automatic Cutter for Side-Cut Brick.

# THE SEMI-AUTOMATIC POWER CUTTER, FOR SIDE-CUT BRICK

The construction and operation of this cut-off table is substantially as follows:

## CUTTING THE BRICK

The Cutter is divided into two sections, the section nearest the machine being provided with a metal table, in the center of which is a horizontal, wire-strung, cutter frame. The mechanism of the cutter moves it alternately back and forth, thereby pushing the wires through the bar of clay and severing it into brick.

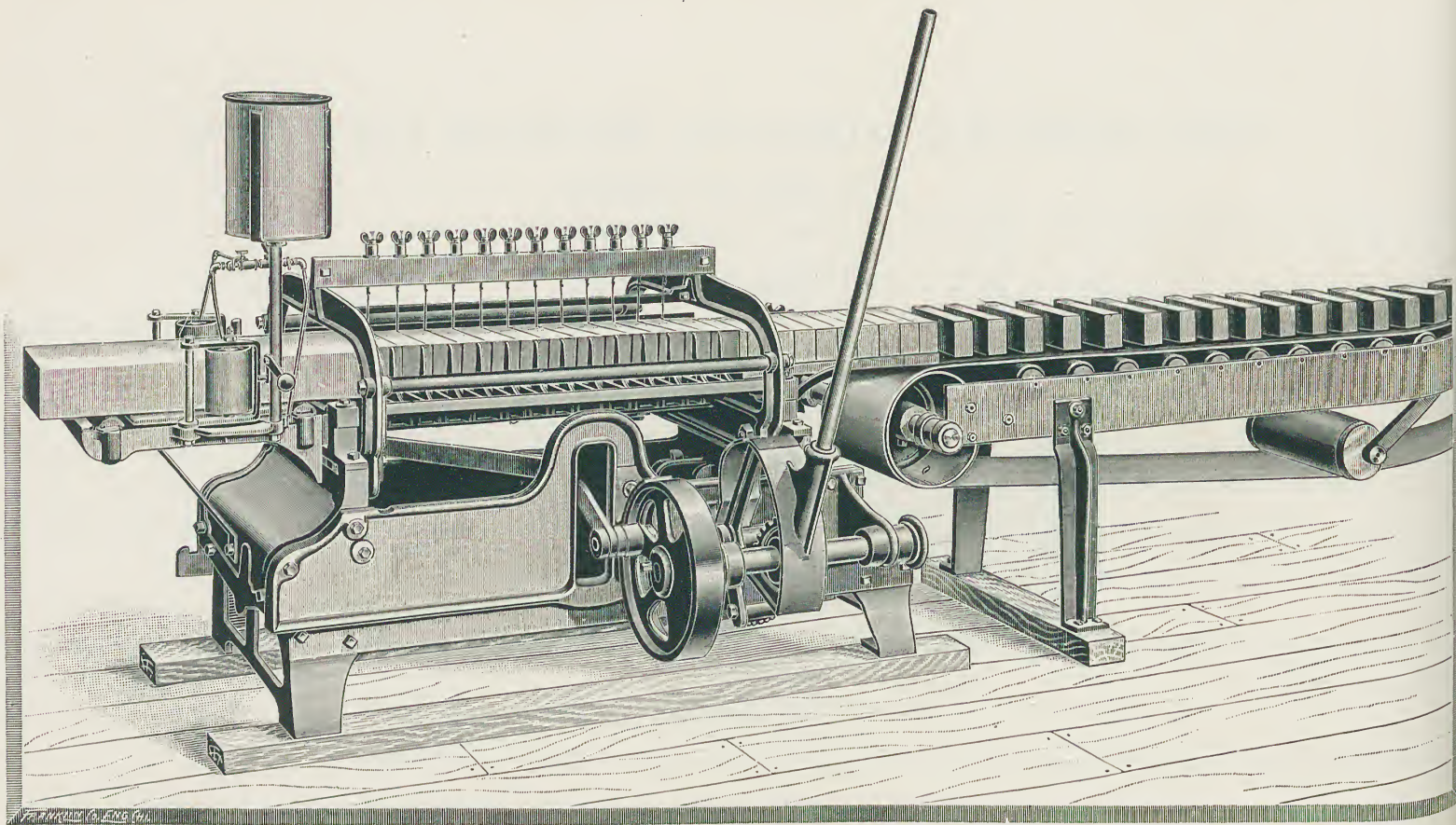
When the bar of clay reaches the proper point near the end of the cut-off table, the operator throws forward the lever, thereby throwing the cutting mechanism into clutch and setting it in operation. The table travels with the bar of clay while the cut is being made, thus ensuring a straight cut. When the cut is completed, the operator then throws the lever back into position, thereby returning the cut-off table to place, close to the machine.

## SEPARATING CARRIAGE

The second section of the carriage is provided with an apron which travels faster than the bar of clay. As the brick pass upon it, they are quickly separated.

## CAPACITY

The machine is capable of cutting from 20,000 to 30,000 brick per ten hours. Weight 3,000 pounds.



Horizontal Hand Power Cutting-Table.



# THE HORIZONTAL HAND POWER CUTTING-TABLE

This cut represents our Horizontal Hand Power Cutting Table.

It is adapted for Side-cut Brick, Fire Clay Slabs, Arch Brick, etc.

The wires are suspended on a movable cutting frame. It is provided with two stationary abutment plates, so as to prevent the column of clay from traveling crooked as it issues from the brick machine die.

## ABUTMENT, PLATES AND ROLLS

A short polished plate, with lubricating rollers at each end, is substituted for the rollers which are generally used to carry the column of clay from the die to the Cutting-Table. This is a very important improvement by which the cleaning of sticky rollers is avoided. The two rollers really bear none of the burden of the column of clay, but are held up against the underside of the column with steel coil springs of sufficient tension to hold them firmly against the column of clay, and to spread over its surface a thin coat of the lubricant, which they carry from the reservoir in which they run.

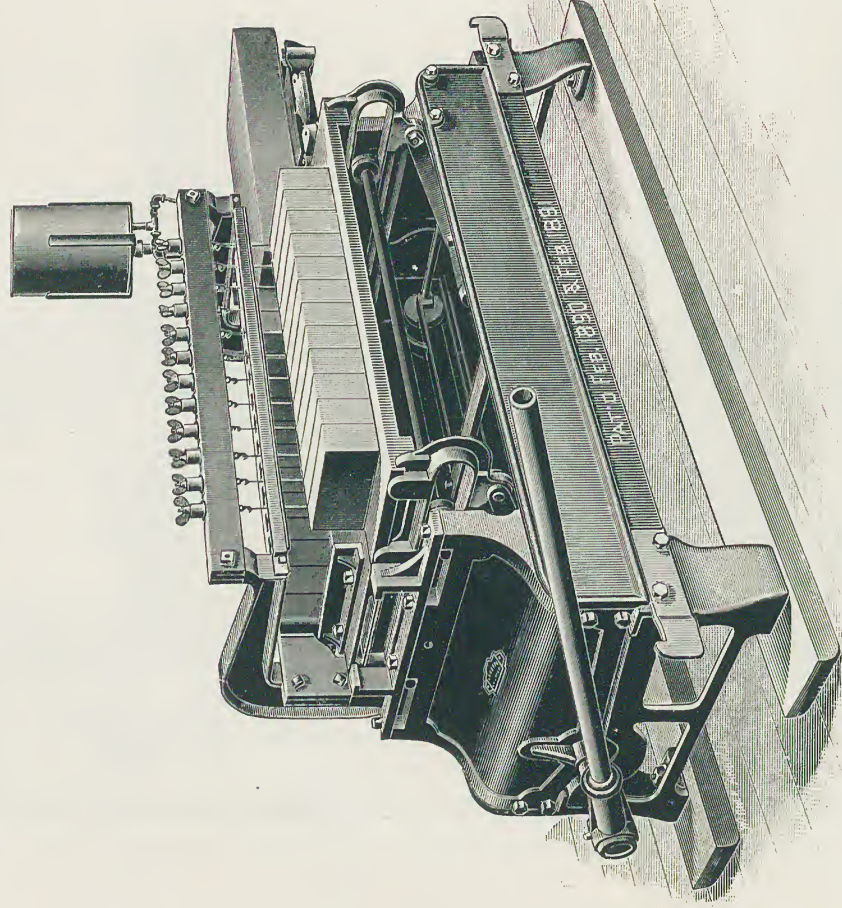
This table is also supplied with two perpendicular lubricating rollers, which lubricate the sides of the column and prevent sticking to the abutment plates. The oil is supplied to these rollers from the reservoir above, the amount of oil being regulated by stop-cocks. The Table is made entirely of iron and steel, and all the working parts move on compound anti-friction rollers. The abutment plates are so constructed that the back of them is clear, which prevents clay from sticking to the wires and clogging.

## CUTTING THE BRICK

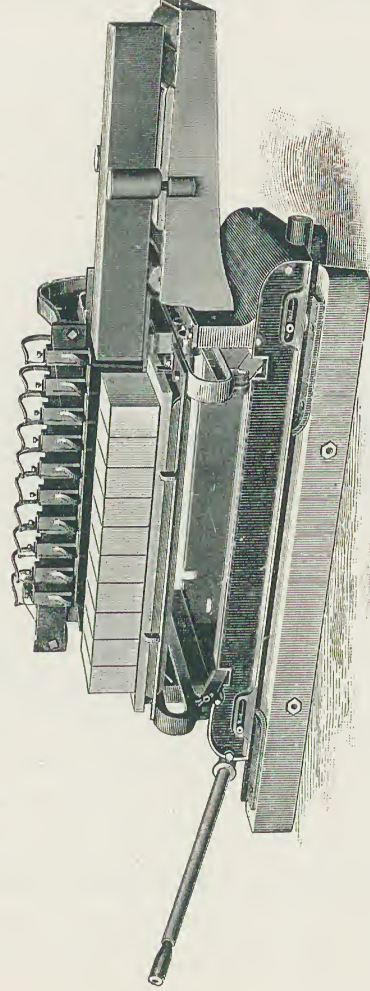
The Table is constructed so as to cut both ways into the column of clay, by disc and rod attachment connecting with lever. The cutting is done by a downward motion of the lever, and at the same time the Table travels with the column of clay; the upward motion of the lever then replaces the Table in its original position.

After the brick are cut they are carried forward by the continuous stream of clay to an off-bearing belt, which is placed at the rear end of the Table so that the brick can be removed by off-bearers, to barrows or drying cars. By the use of this important invention, great advantages are derived therefrom, over the constant drudgery found in the ordinary Board Delivery Table, in handling bricks to barrows or iron cars, besides being a great labor-saving machine. One ordinary man can cut 70,000 brick in ten hours with ease on this Cutting-Table. Weight of Table, with a ten-foot long off-bearing belt, 2,100 lbs.

SIDE-CUT BOARD DELIVERY TABLES.



Style "F."



No. 5.

# SIDE-CUT BOARD DELIVERY TABLES

The Side-Cut Board Delivery Tables, as shown on the opposite page, are adapted for cutting side-cut brick, fire slabs, arch brick, etc.

## OPERATION OF TABLE

The wires are suspended on a movable cutting frame, and the abutment plate stationary. By this means the slab of clay is cut into bricks without any waste, saving one man in the working of it. The operator stands at the end of the Table, farthest from the machine, and operates the lever by which the wires are drawn across the slab, and the pallet or board is drawn under the brick while being cut. The cutting is done at the moment when the traveling column of clay abuts against a stopping plate near the operator, which starts the table to move outward. After the cut is made, the operator pulls the Table toward him; this enables the wires to clear the end of the traveling column of clay. The back stroke of the lever replaces the wires in their original position and deposits the board with brick at the front of table, so that they can be removed.

## OILING DEVICE

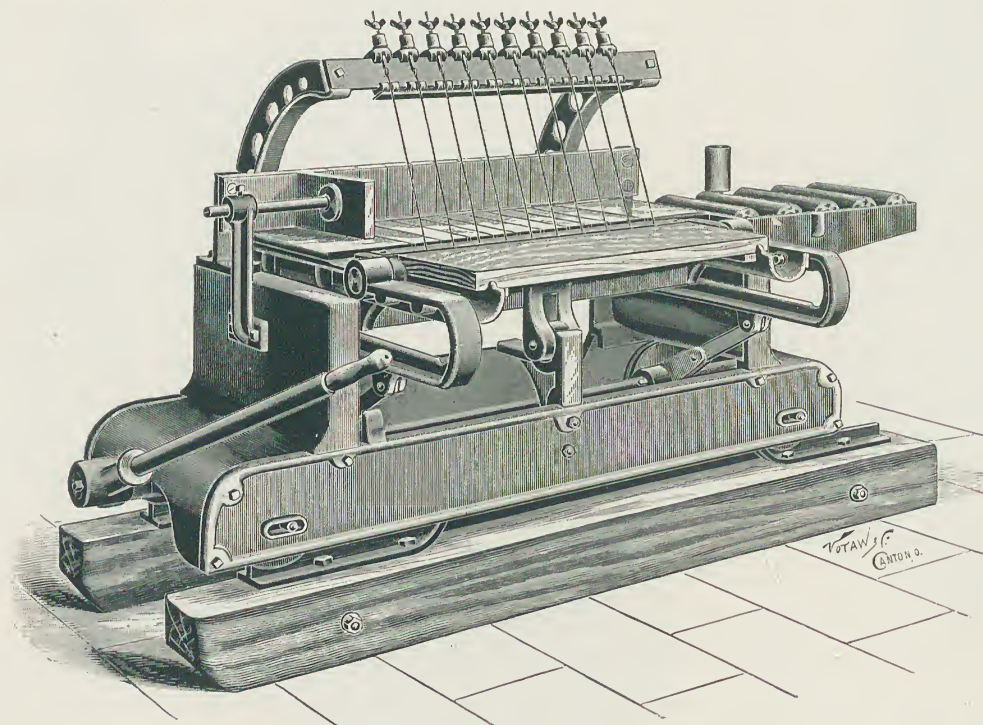
A short polished plate with a lubricating roller at each end is substituted for the rollers that are generally used to carry the column of clay from the die to the Cutting-Table. This is a very important improvement by which the cleaning of the sticky rollers is avoided. The two rollers bear none of the burden of the column of clay, but are held up against the underside of the column with steel coil springs, of sufficient tension to hold them firmly against the column of clay, and to spread over its surface a thin coat of lubricant, which they carry from the reservoir in which they run.

The Table is also supplied with a perpendicular lubricating roller, that lubricates the side of the column and prevents sticking to the abutment plate. The oil is supplied to this roller from the reservoir above, the amount of oil being regulated by a stop-cock. This Table is made entirely of iron and steel; and all the working parts move on compound anti-friction rollers. The abutment plate is so constructed that the back of it is clear, which prevents clay sticking to the wires and clogging. The end abutment is fastened to the platen, which is the latest improvement.

Weight, Style F..... 1,000 pounds

Weight, No. 5 . . . . . 750 pounds





No. 8 Down-Cutting Board Delivery Table.

## No. 8 DOWN-CUTTING BOARD DELIVERY TABLE

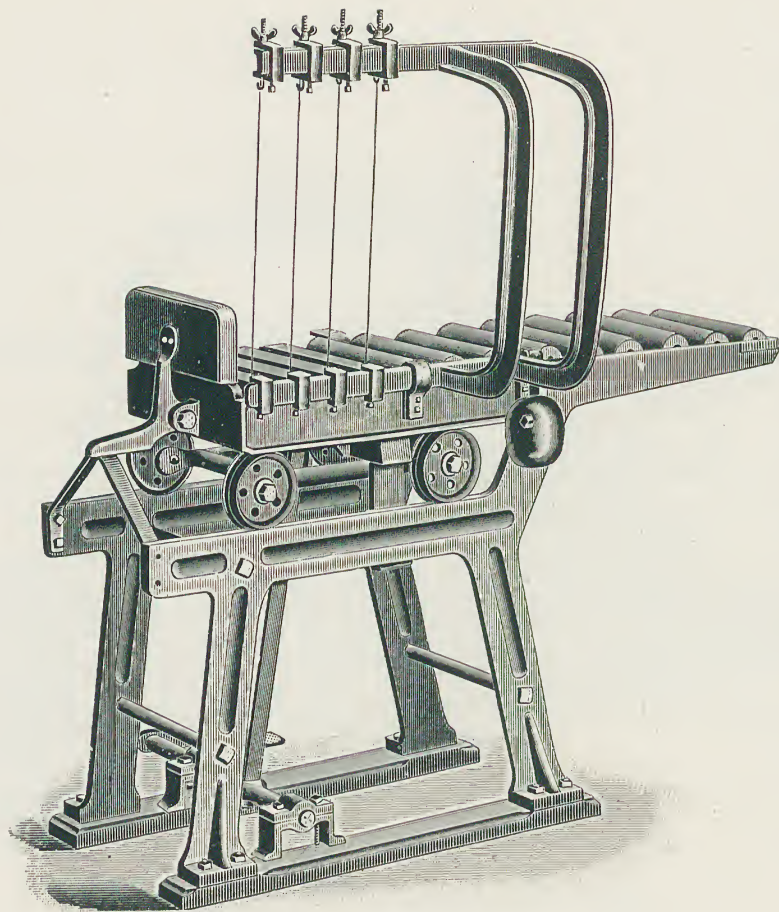
*PATENTED*

This Table is especially adapted for use where face brick are to be produced. The wires cut downward through the bar of clay, leaving a nice, smooth, clean cut on the face of the brick; at the same time, the advantages of a board delivery table are secured. Nine brick are cut at each stroke of the lever.

The setting and operation of the cutter is substantially the same as that of the Style "F" and No. 5 table previously described.

### CAPACITY

With this Table a skillful operator can cut and handle from 15,000 to 20,000 side-cut brick per ten hours. Weight, 800 lbs.

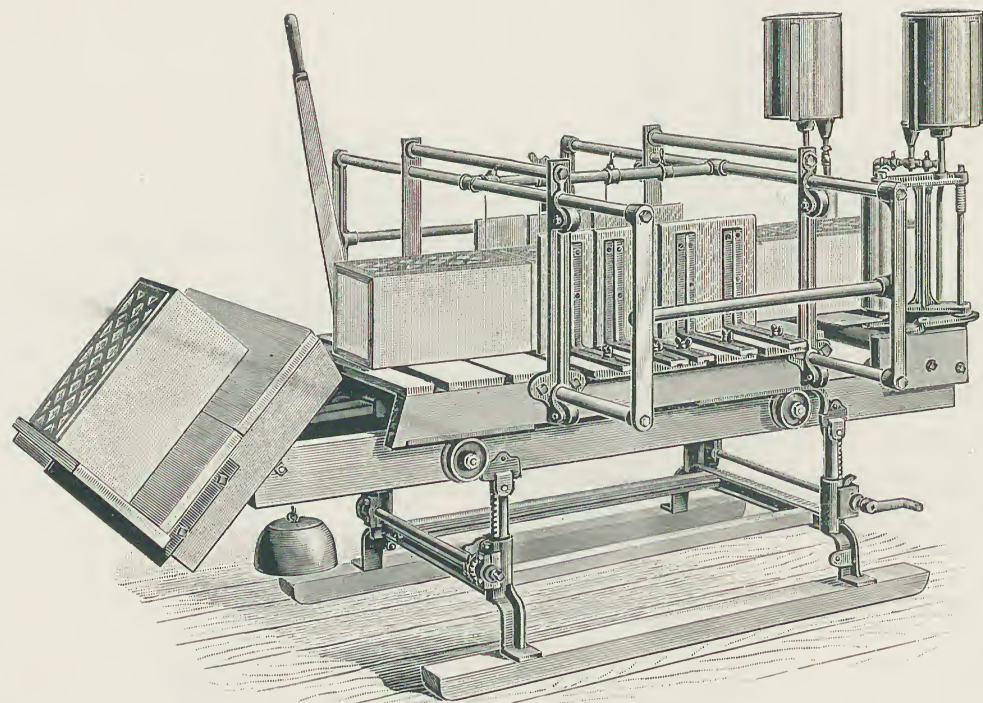


Daisy Cutting-Table.



## THE DAISY CUTTING-TABLE

Although this Table is quite small, and as only four brick are cut at a time, it is well adapted for cutting from 15,000 to 20,000 brick in 10 hours. One of its many good features is its "down cut," thereby leaving the brick with smooth edges. The abutment plate is hinged. After the cut is made the table is moved back, which releases the abutment plate, allowing it to fall back out of the way in removing the brick, which is done before the cutting frame is raised. In its construction, large wheels are used to reduce resistance. A counter weight is attached to the cutting-frame which accelerates the cutting of brick. The Daisy can be used for cutting end and double wedges if desired. It is intended for side-cut brick, as the illustration shows. Shipping weight 250 pounds.



Cutting-Table for Hollow Ware.

# CUTTING-TABLE FOR HOLLOW WARE

The accompanying cut represents our Reciprocating Hand Power Table, especially designed for the cutting of plain and ornamental blocks, also fire-proofing. A table of this description has been a long-felt want, especially among fire-proof manufacturers, and the advantages of this table over the old style bow-cutting-table will be readily seen by glancing at the cut.

## MOVEMENT

The Table has both a longitudinal and transverse movement, thereby giving the man in charge every facility for cutting a true and perfect block.

## SUPPORTING FRAME

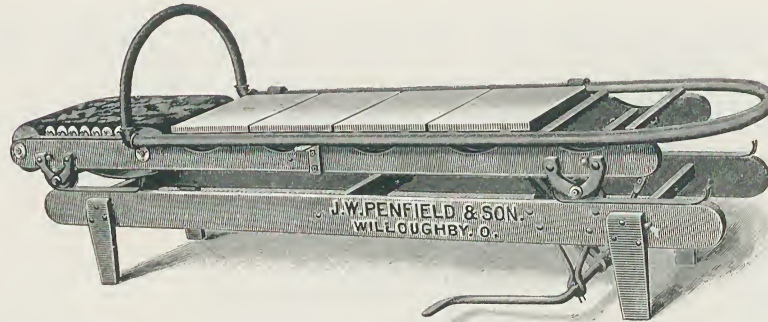
The supporting frame can be raised or lowered at the will of the operator, to suit dies of any dimensions, from the very smallest partition blocks to the largest end or side construction tile for arches known to the trade. Blocks 20 inches on the base can be cut with perfect ease. The tile are kept in true position, while flowing from the brick machine, by the side platens. The side platens are adjustable and can be set in or out to conform with the smallest or largest blocks made. After the blocks are cut they still continue to travel to the dumping table, where they are dumped onto a pallet placed on end, whence they are off-bearred and put either on the drying floor, or on dry cars and removed to the drying tunnel.

## CONSTRUCTION

The Table is simple in construction, strong and durable, and easy to operate. A boy of 16 years of age can handle it with ease. Weight, 600 pounds.



# BOARD DELIVERY CARRIAGE FOR HOLLOW WARE



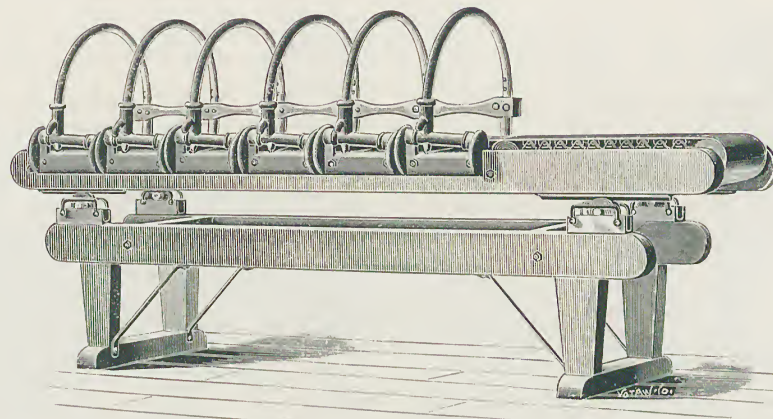
The section next to the brick machine is arranged with rollers and belt. The balance of the carriage is arranged to receive boards on pallets, which should be the length the material is to be cut and of suitable width.

## MANNER OF OPERATION

When ready for operation, the sliding carriage is pushed up close to the machine and the cutter frame thrown back. The sliding carriage is held up to the machine by pressing down on the foot lever until the traveling bar of clay has reached the end of any one of the boards on the carriage. The lever is then released (allowing the sliding carriage to travel with the bar of clay), the blocks are cut, the loaded boards are lifted off, the cutter frame thrown back and empty boards put in place. The sliding carriage is moved back into position by means of the foot lever.

By means of this carriage, large flat and hollow ware can be cut without waste, and a convenient method is afforded of handling it upon boards. Weight 300 pounds.

# BOARD DELIVERY CARRIAGE FOR END CONSTRUCTION HOLLOW WARE



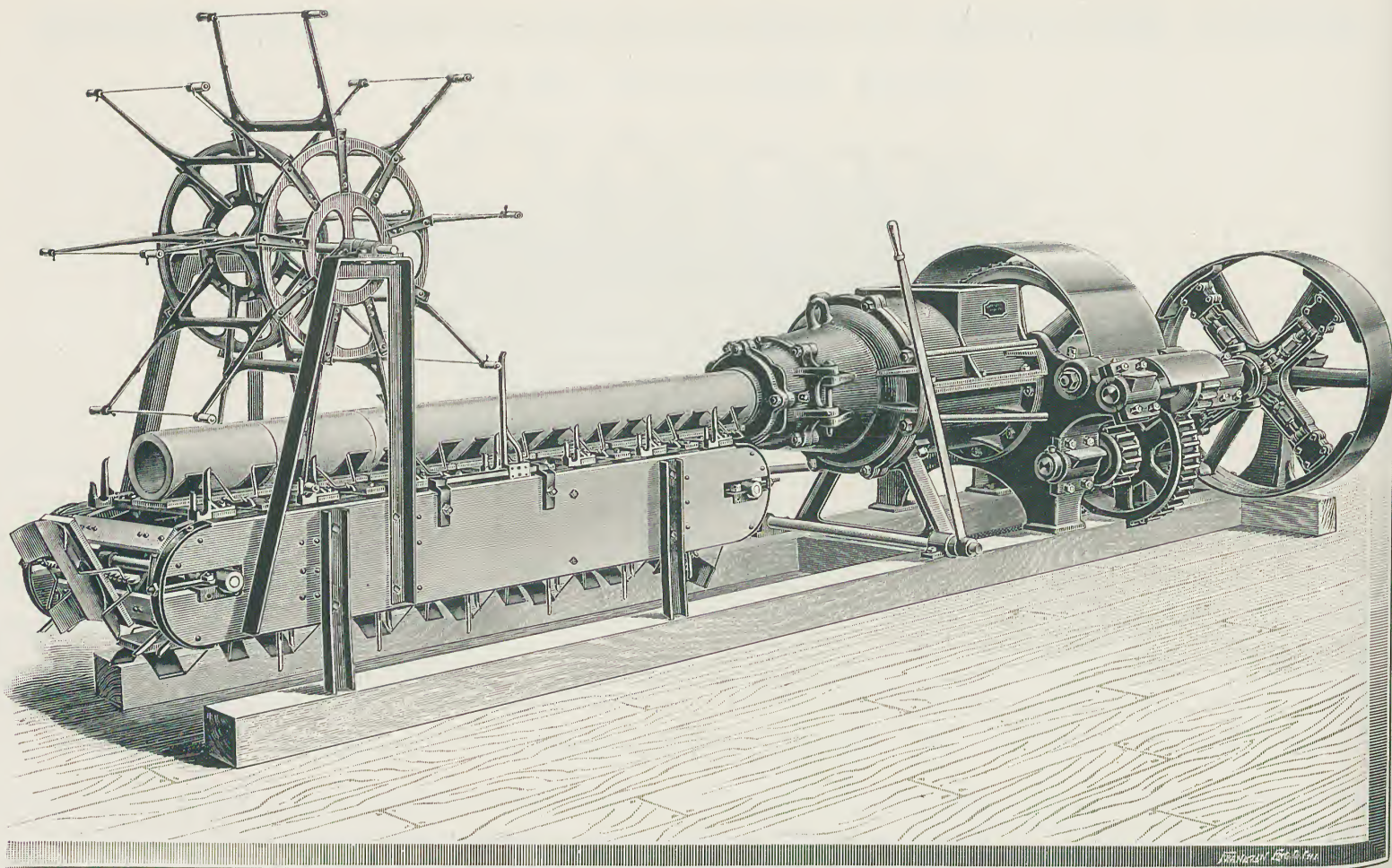
This carriage is especially designed for cutting hollow fire-proofing material for what is known as the "end construction" style of flat arches, the blocks being laid crossways of the arch so that the hollow spaces in the blocks run at right angles to the iron beams instead of parallel with them. The ends of the blocks are cut off at an angle, so that they will securely maintain their position in the arch.

The section of the carriage next to the brick machine is provided with rollers and belt. The balance of the carriage is arranged for boards or pallets, which should be the length the material is to be cut. The cutter frame is so arranged that the wires descend in a slanting direction, securing an angling cut on the end of the block.

## MODE OF OPERATION

When ready for operation, the cutter frame is thrown back and the traveling or upper part of the carriage is held up close to the machine until the bar of clay reaches the end of any one of the boards; the carriage is then allowed to travel with the bar of clay, the blocks are cut, and the loaded boards are lifted off, the cutter frame is then thrown back, empty boards put in place, the carriage pushed up to the machine, and the operation repeated. Weight 300 pounds.





Automatic Tile-Cutting Table.



# AUGER TILE MACHINES

The Auger Tile Machines are substantially the same as the Auger Brick Machines already described, with the exception of the dies and cut-off table, and, in some cases, of the style of auger used.

## No. 2 GIANT AUGER TILE MACHINE

This machine is designed for tile yards desiring large capacity. The construction is the same as the No. 2 Giant Brick Machine, but the auger, dies, and cut-off table are, of course, different.

## AUTOMATIC TILE-CUTTING TABLE

The preceding cut shows our Automatic Tile Cutting-Table, in connection with our No. 2 Giant Machine. Its cost places it within the reach of every manufacturer, and we assure those who buy, that in economy of operation, saving of tile, and uniformity and quality of product, they will be fully repaid within sixty days.

### POINTS OF SUPERIORITY

This table is made of all iron and steel. Cuts tile from 2 inches to 8 inches diameter, inclusive. Will cut as many tiles as any machine will make. Cuts the ends of the tile perfectly square. Can be adjusted for any sized tile in five minutes. Sets close to die and supports the tile column as soon as it leaves the machine. Will produce one-sixth more tile from the same column than any hand-cutting table. The legs are made adjustable (not shown in cut), so as to raise or lower the table, to line up with any die in five minutes.

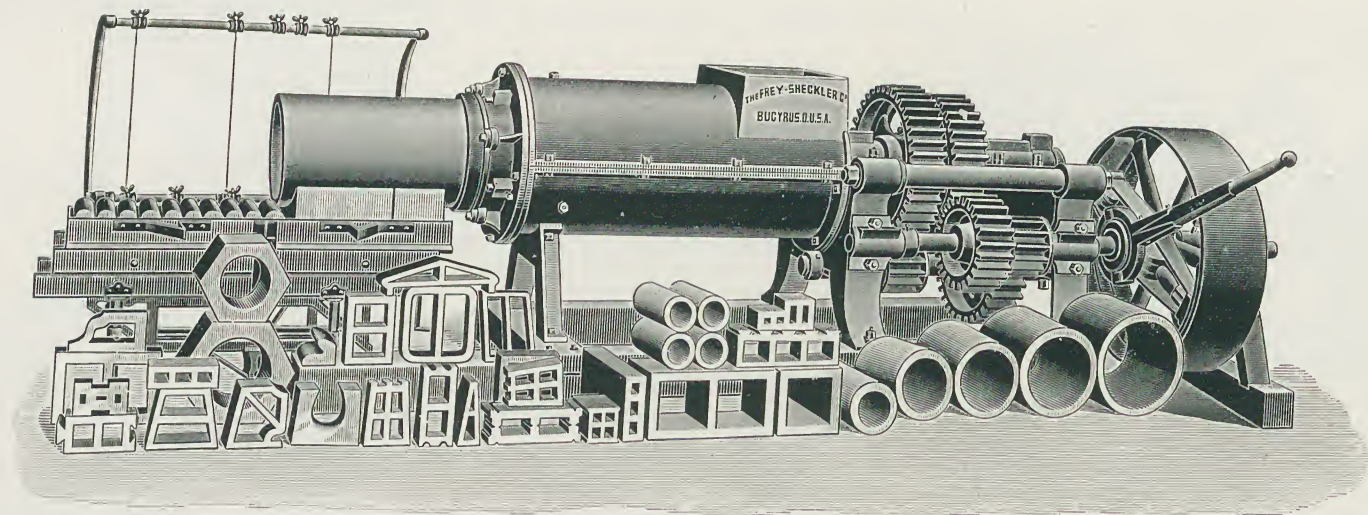
It will pay for itself in sixty days in the saving of labor and defective tile. There are no stubs to throw back to the machine. It dispenses with a man at \$1.50 per day to cut off. There is no ground pit required to allow long guide-arms to pass underneath the table.

### GUARANTEE

We guarantee the successful operation of this table, and will send one to any responsible party on trial.

### FLOOR SPACE AND WEIGHT

This table will require a floor space of 9 feet by 2 feet 3 inches. Weight of table, 765 pounds.



Improved Centennial Arranged for Tile.

# IMPROVED CENTENNIAL ARRANGED FOR TILE

This cut shows the Improved Centennial in connection with the Combination Table arranged for making Drain Tile and Hollow Blocks.

This machine will make drain tile as large as 20 inch diameter.

The cut shows a variety of work made on this machine.

## CUTTING-TABLE

The Combination Table, which is shown in connection with the improved Centennial Machine, is especially adapted for cutting Tile, Hollow Building Blocks, Fire Proofing, Terra-Cotta Lumber, etc. The cutting wires can be easily shifted, so as to cut the various lengths required. Suitable straight rollers are furnished for brick and hollow blocks, while those of tile have depressions in them for one, two or three streams of tile.

## CUTTING AND HANDLING

All sizes of tile, up to and including 5 inches in diameter, are cut and handled on the rollers; from 6 inches to 10 inches in diameter are cut and handled in copper-lined or wooden troughs, which are made to fit the Table.

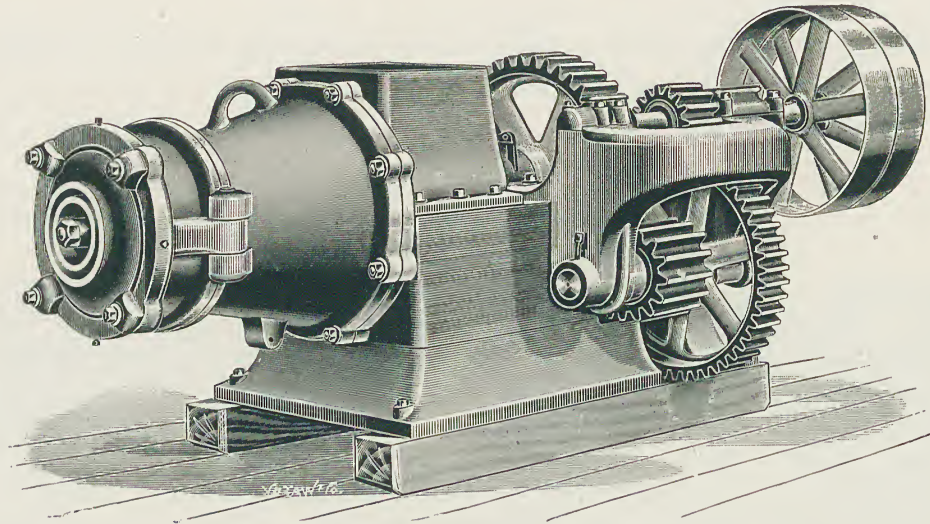
A suitable bed for the use of the Osman Patent Tile Carrier is also furnished with this Table, when desired, for tile larger than 7 inches in diameter. For large hollow blocks an additional cutting frame of suitable size can be attached in place of the small one. A screw adjustment raises and lowers the table to any desired height.

## SIZE AND WEIGHT

The Machine and Table will occupy 16 feet by 4 feet 6 inches floor space. Weight of Machine and Table 4,500 pounds. Any of our Cutting-Tables can be used in connection with the Improved Centennial Machine.



# No. 6 AUGER TILE MACHINE



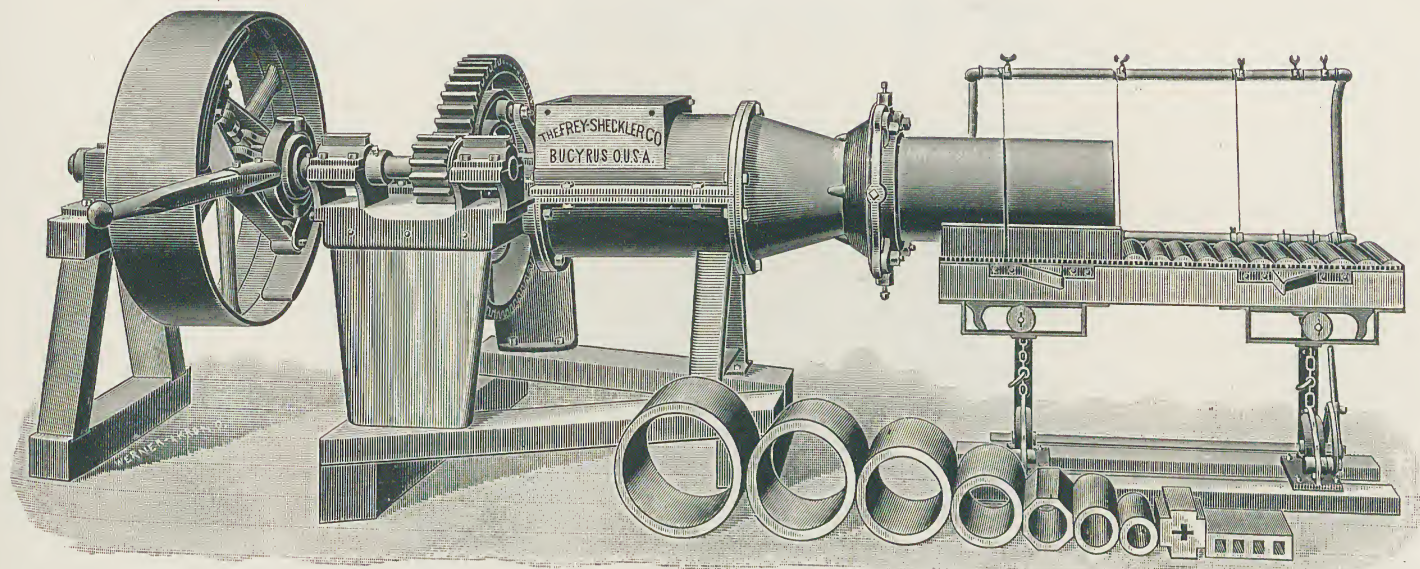
The accompanying cut represents the No. 6 Auger Machine as arranged for the manufacture of tile. The machine is provided with a hinged die front into which the die fits, being held in position by suitable die buttons. The hinged front is also provided with set screws, by means of which the die can be quickly centered. The machine is provided with a safety break-pin. In case the clay should get too stiff, the break-pin will give way, allowing the hinged front to swing open, and obviating breakage of the die or machine. Weight 4,900 pounds.

## Nos. 8 AND 10 AUGER TILE MACHINES

The Nos. 8 and 10 Auger Machines are also well suited for the manufacture of tile, and we have a complete line of patterns for equipment for this purpose. Full details will be furnished upon application.

Weight, No. 8 Machine.....	6,860 pounds
Weight, No. 10 Machine.....	9,750 pounds

# THE MASCOT BRICK AND TILE MACHINE



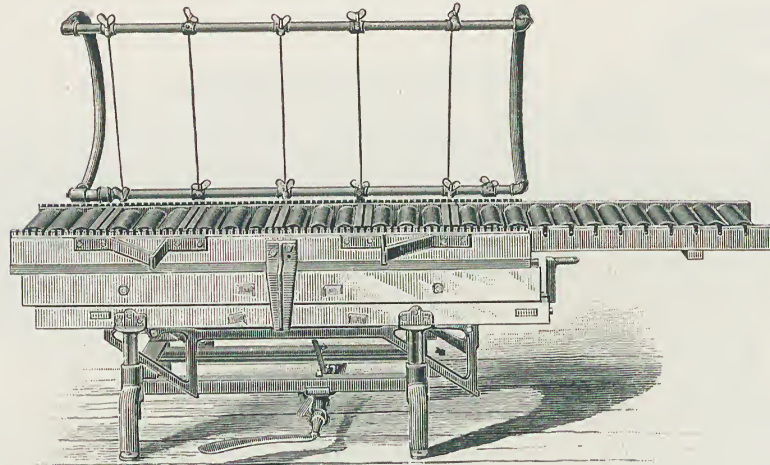
This illustration represents the Mascot Machine arranged for making Tile, in connection with the Mascot Cutting-Table.

## CONSTRUCTION AND CAPACITY

This Machine will make Tile up to and including 10 inches diameter, of any of the standard shapes. Troughs are used in place of rollers for 6, 8 and 10-inch Tile. This Machine and Table will occupy a floor space of 4 feet by 14 feet. Diameter of driving pulley, 36 inches; face of driving pulley, 10 inches; speed, 180 revolutions per minute; capacity of Machine, 4,500 6-inch Tile in ten hours; weight of Machine and Table, 2,600 pounds.



# COMBINATION CUTTING-TABLE



The Combination Table is especially adapted for cutting Tile, Hollow Building Blocks, Fire Proofing, Terra-Cotta Lumber, etc. cutting wires can be easily shifted, so as to cut the various lengths required. Suitable straight rollers are furnished for brick and hollow blocks, while those of tile have depressions in them for one, two or three streams of tile.

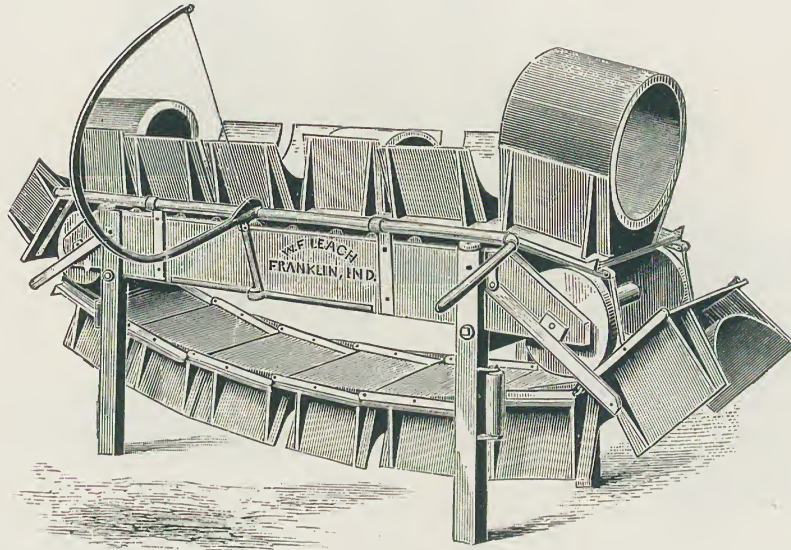
## CUTTING AND HANDLING

All sizes of tile, up to and including 5 inches in diameter, are cut and handled on the rollers; from 6 inches to 10 inches in diameter cut and handled in copper-lined or wooden troughs, which are made to fit the Table.

A suitable bed for the use of the Osman Patent Tile carrier is also furnished with this Table, when desired, for tile larger than 7 inches in diameter. For large hollow blocks an additional cutting-frame of suitable size can be attached in place of the small one. A screw adjustment raises and lowers the Table to any desired height. Weight 225 pounds.

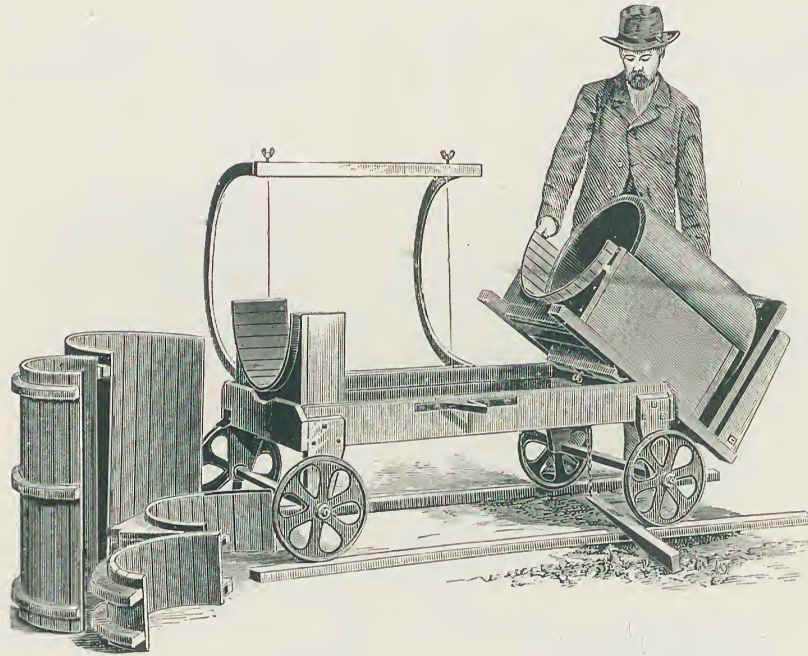


## LEACH'S PATENT TILE TABLE



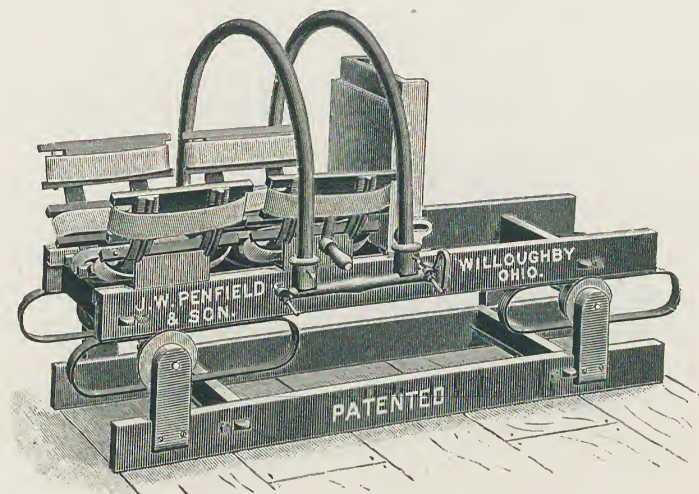
The above cut represents the Leach Patent Table. This Table is intended for tile above four inches and as large as twelve inches in diameter. The troughs are self-adjusting, fitting the different sizes of round tile named. It will be noticed that all the receiving troughs, which are made of sheet metal, are hung together as a continuous chain, so that the pipe as it emerges, does not have to slide across the metal, but makes the trough follow along, fitting the next one to it in position for the tile. This Table works very nicely and will also dump the tile on a board if held in position at the end of the Table. Weight 170 pounds.

# BROSE'S PATENT TILE TABLE



This cut represents the Brose Patent Tile Table for cutting and handling tile from 10 inches to 20 inches diameter, usually 24 inches long. The mode of operation is as follows: After the large trough and guide, as shown by the cut, are thoroughly oiled, the machine is started, where the tile runs through the guide into the trough, then the Table is released, so that it partakes of the motion of the tile, thereby securing a straight cut by means of the wires on the cutting-frame. When cut, the Table is tilted on the gudgeons, requiring very little effort, and the tile is thereby up-ended on a board which has been previously placed on the roller frame on the end of the trough. This brings the end of the tile on the board near to the floor, where a two-wheeled truck, with two long prongs (which reach under the board), is used to carry the tile away to its place. As the large tile, when two feet long and twenty-five inches on the outside, weigh nearly two hundred pounds, it will be seen that this mode of handling and arrangement is needed to handle them. By a lever, the table is drawn back and held against the machine until ready to cut, the tile being held by a spring catch, which is released by the foot of the operator when the trough is tilted. Weight of table, 160 pounds.

# PATENT DUMPING CUT-OFF TABLE



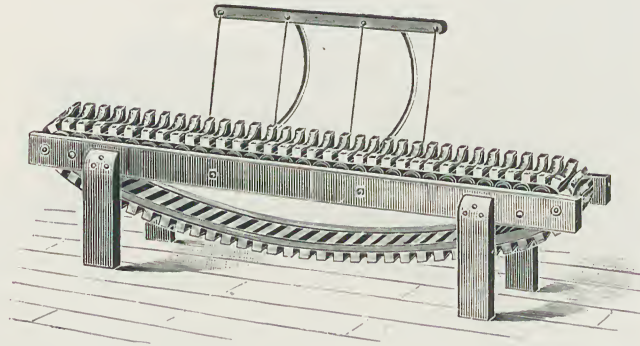
For large tile, our Improved Dumping Cut-Off Table, herewith shown, is unexcelled. The trough has a series of endless belts at the sides and bottom, so that the tile does not slide on the trough, but is carried through it upon the endless belts. The cut-off table is provided with a foot-lever (not shown in the cut), whereby the table is easily pushed back to the machine.

The endless belts in the sides and bottom of the trough obviate the necessity of lubricating the troughs, and the tile pass through easily and retain their perfect form. There is no excessive friction to cause the tile to move more rapidly at the top than at the bottom, and a good straight cut on the ends of the tile is secured. Two wires can be used on the cutter frame in case it is desired to re-cut the ends. The standard holding the pallet board is adjustable, back and forth, so that the tile can be cut a little longer or shorter than the regular lengths, if necessary on account of using clay which shrinks more or less than usual. This can only be accomplished, however, where but one wire is used on the cutter frame, as, if two wires are used, the tile will be cut to regular length.

Unless otherwise specified, the cut-off table is arranged to cut and handle the tile in single lengths, but, if preferred, we can arrange it, instead, to cut and handle the tile in double lengths. The table is made either for 10-inch alone, or 12-inch alone, or for 10 and 12-inch combined. In ordering, give the outside diameter of the green tile, so that the troughs may be made to correspond. Weight 350 pounds.



## TILE TABLE FOR PLUNGER MACHINES



The accompanying cut represents our Tile carriage with lag belt and cutter frame attached. This table is a very convenient one for use in connection with our Plunger Tile Machines. The lags being hollowed out and padded, forming a very satisfactory support for the tiles, handling them without bruising or marring them. The carriage is provided with wooden rollers having iron gudgeons and iron bearings, these rollers forming a support for the lag belt. For the end rollers, iron flange wheels are used, holding the lag belts in alignment so that they move along without friction. For handling and cutting tile 8 inches in diameter, or smaller, this lag belt carriage has given splendid satisfaction. Weight 100 pounds.

# PLUNGER BRICK MACHINES

## THEIR USES

In addition to the manufacture of common building brick, Plunger Machines are used for making a variety of other clay products.

### FACE AND ORNAMENTAL BRICK

By handling the brick carefully and drying them upon pallets, a very fine quality of face brick can be secured without repressing. These brick are well adapted for facing up fine fronts, and can be sold at an advanced price over common brick, although it costs no more to make them on the machine. A variety of shapes of ornamental brick and blocks can also be produced.

### TERRA-COTTA LUMBER, FIRE-PROOF BUILDING MATERIAL, ETC.

Our Plunger Machines are especially suited for the production of all kinds of hollow fire-proof building material, terra-cotta lumber, hollow building blocks, foundation and cellar blocks, etc.

### DRAIN TILE

Plunger Machines are unexcelled for the manufacture of drain tile, making all sizes at the least possible expense.

### ROOFING TILE

Plunger Machines are also successfully used for producing blanks for roofing tile, clay shingles, etc., these blanks being repressed to secure the desired form and configuration.

## MODE OF OPERATION

The tempered clay is fed into the mixing cylinder, in the center of which is a shaft filled with blades which mix the clay and force it through a porthole into the pressing chamber. The plunger presses the clay through the die on to the cut-off table.

The plunger is propelled by a steel cam on the main shaft, between the upper and lower bed plates. The cam works upon friction rollers at both ends of the sliding plunger frame, giving alternately a backward and forward motion at each revolution of the shaft. The machines are made either single or double workers, one cam doing the work in either case.

When the bar of clay comes to rest the operator cuts it into brick by means of a suitable cut-off table.

# PLUNGER MACHINES

## GENERAL CONSTRUCTION

The machines are constructed in a strong, substantial manner throughout, using the best of material. The gearing is extra heavy and strong. The main shafts are of forged steel, being hexagon in shape where the knives fit on, holding the knives in position without keying or set-screwing.

## STEEL CASTINGS

The cam, friction rollers in the plunger head, and bevel pinions are of steel. In the No. 20 and No. 15 machines the spur pinions are also of steel, and the clay boxes are lined with renewable steel plates; the plunger heads of the No. 20 machine have renewable steel liners.

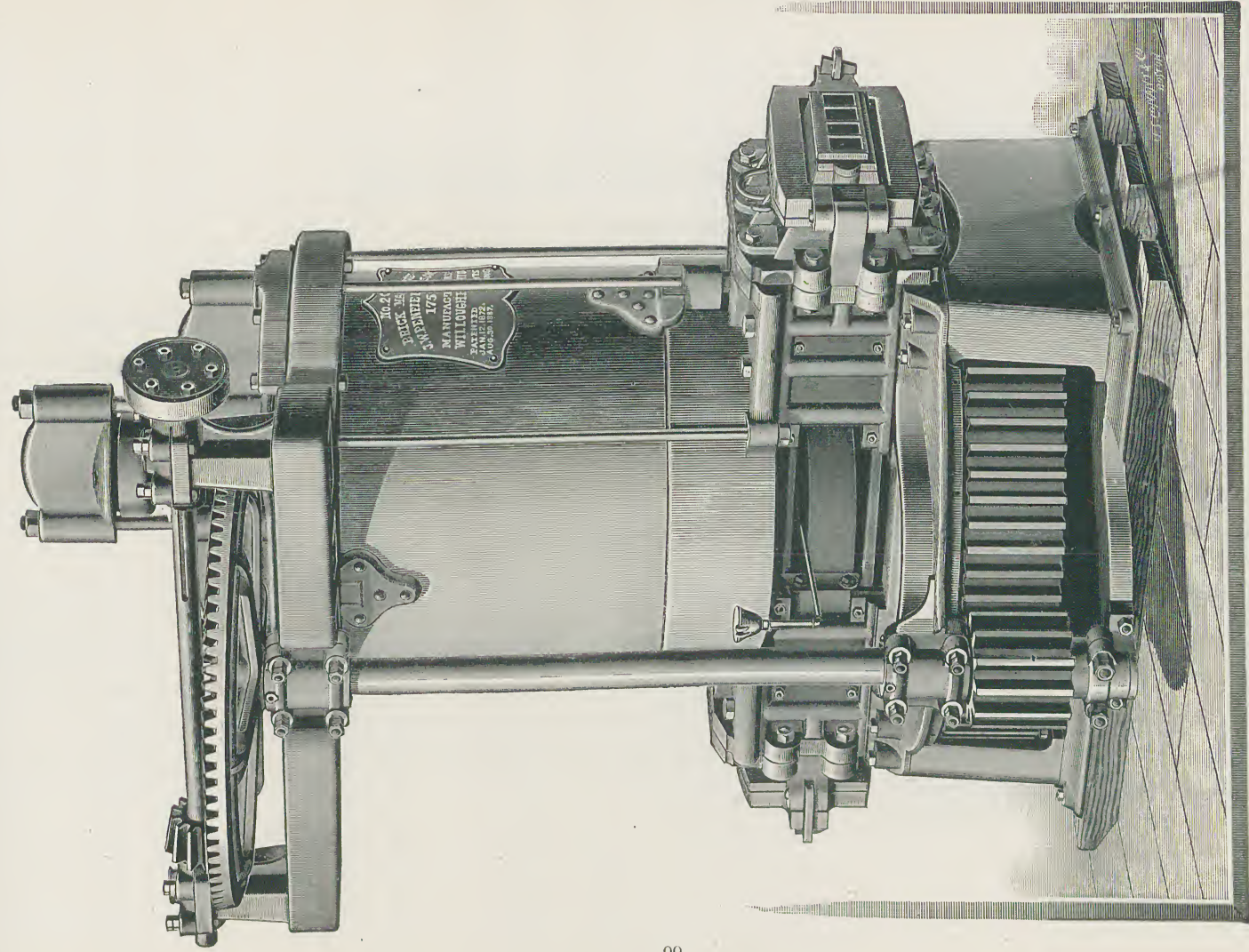
## TUB

The tub is of heavy boiler plate. A suitable door is provided on the larger sized machines.

## SPECIAL FEATURES

The plunger head is provided with an adjustable scraper or wing to compensate for wear. Our special patterns of cut-off plates allow a larger amount of clay to pass through the port-hole and into the clay chamber each time than in any similar machine; the capacity is thus greatly increased.





No. 20 "A" Plunger Brick Machine.  
PATENTED.

# No. 20 "A" BRICK MACHINE

PATENTED

## SHAFTING, GEARING, PULLEYS AND SPEED

The main shaft is of forged steel,  $7\frac{1}{2}$  inches in diameter; the bevel wheel shaft is  $4\frac{3}{8}$  inches in diameter, and the pulley shaft  $2\frac{7}{8}$  inches. The master wheel weighs 3,500 pounds; the pinions are of steel. The machine is back-gearred 42 to 1. The pulleys are 48 inches in diameter, 12-inch face, and should make about 140 revolutions per minute.

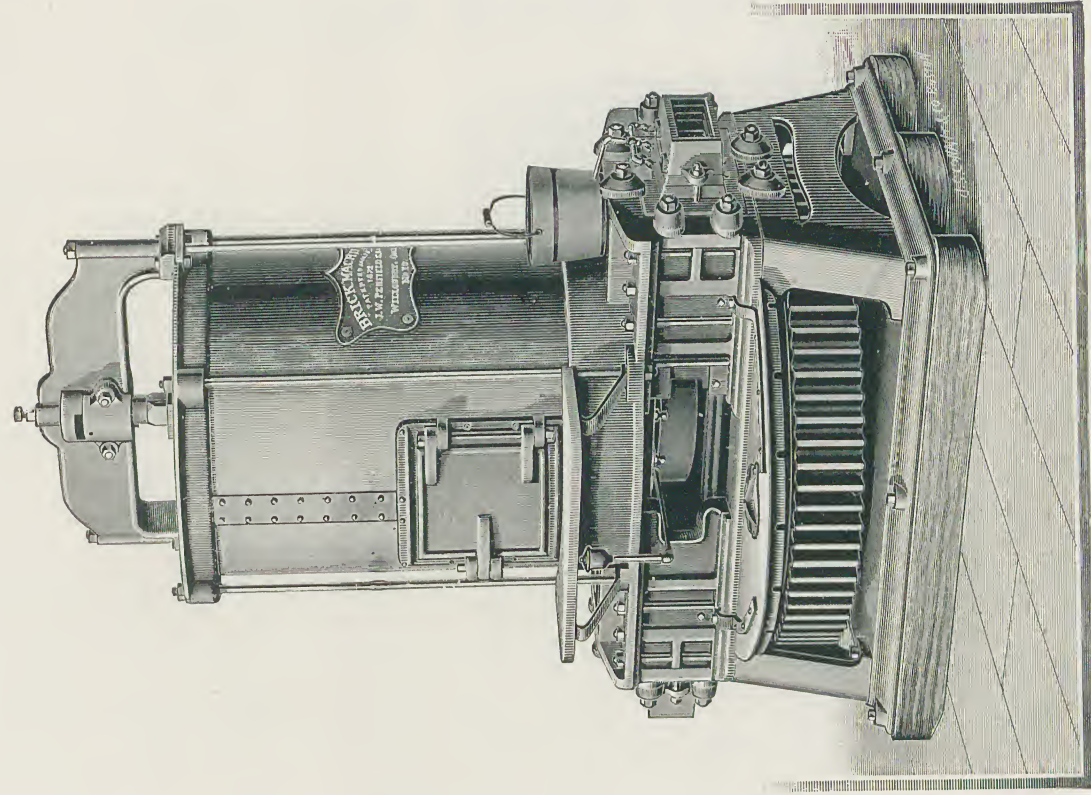
## CAPACITY AND POWER REQUIRED

Under ordinary circumstances and with average clay the machine will make from 50,000 to 80,000 standard-sized brick per ten hours, and can be run with 30 horse-power.

## OTHER DETAILS

Unless otherwise specified, the pulley shaft is arranged parallel to the cut-off tables; we can arrange it at right angles, if so ordered. The bed plates are in halves. The main shaft bearing in the top bed plate is of gun-metal, with housing to keep clay out. The bearings in bottom bed plate and bottom bridge-tree are in halves, with gun-metal bushings, adjustable and removable. The machine has hinged die fronts, door in tub, extra heavy steel cam and rollers; also special plunger heads and cut-off plates preventing leakage of clay.

Height of machine, 11 feet 6 inches; length of sills, 7 feet; width of base, 4 feet; distance across spur gears, 7 feet; distance from outside to outside of die, 8 feet; estimated weight of machine, 26,000 pounds.



No. 15 "D" Plunger Brick Machine.

PATENTED.



# No. 15 "D" BRICK MACHINE

PATENTED

## SHAFTING

The main shaft is steel, 6 inches in diameter; the bevel wheel shaft is  $3\frac{1}{2}$  and the pulley shaft  $2\frac{1}{8}$  inches in diameter.

## GEARING, PULLEYS AND SPEED

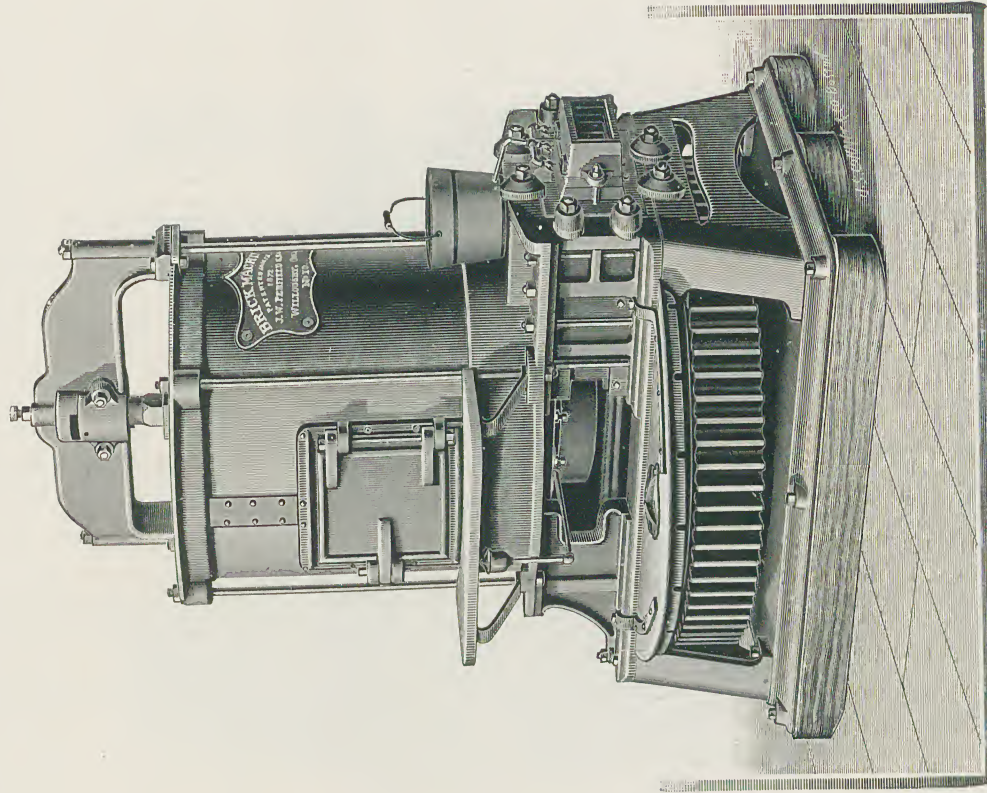
The gearing is of approved design, extra heavy and strong, with steel pinions. The machine is back-gear<sup>ed</sup> 42 to 1; the pulleys are <sup>42</sup> inches in diameter, 10-inch face, and should make about 145 revolutions per minute.

## CAPACITY AND POWER REQUIRED

Under ordinary circumstances and with average clay, the machine has an easy working capacity of 40,000 standard-sized brick per <sup>ten</sup> hours, and can be operated with a 20 horse-power engine.

## OTHER DETAILS

The bearing in the top bed plate is of gun-metal, with a housing to keep the clay out. The bearings in the bottom bed plate and bottom bridge-tree are made in halves with gun-metal bushings, are adjustable and easily removable. The clay box has steel wear plates on the bottom and sides. These prevent wear of the bottom plate or sides, and can be replaced when worn. The plunger head and cut-off plates are of special pattern to prevent leakage of clay. Unless otherwise specified, the pulley shaft is arranged parallel to the cut-off tables; if specially ordered, we can build it at right angles. Height of the machine, 10 feet; length of sills, 6 feet 4 inches; width from out to out of sills, 3 feet 4 inches; extreme width, 6 feet 7 inches; estimated weight, 13,000 pounds.



No. 15 "S" Plunger Brick Machine.

PATENTED.

# No. 15 "S" BRICK MACHINE

PATENTED

## SHAFTING, GEARING, PULLEYS AND SPEED

The main shaft is of steel, 6 inches in diameter; the bevel wheel shaft is  $3\frac{1}{2}$  inches in diameter, and the pulley shaft  $2\frac{1}{8}$  inches. The machine is back-gearred 42 to 1. The gearing is of approved design, extra heavy; the pinions are steel. The pulleys are 42 inches in diameter, 10-inch face, and should make about 145 revolutions per minute.

## CAPACITY AND POWER REQUIRED

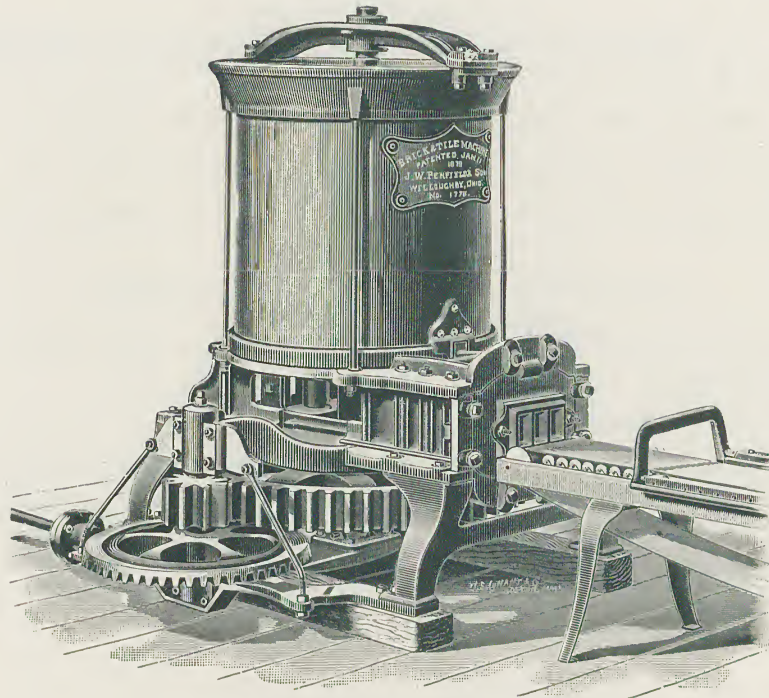
Under ordinary circumstances and with clay of average quality, this machine has an easy working capacity of 25,000 to 30,000 standard sized brick per 10 hours, and can be operated with a 15 to 20 horse-power engine.

## OTHER DETAILS

The details of construction, as given in the description of the No. 15 "D" Machine, apply equally well to the No. 15 "S," except as herein specified.

Height of machine, 9 feet 2 inches; length of sills, 6 feet 4 inches; width from out to out of sills, 3 feet 4 inches; extreme width, 6 feet 7 inches; estimated weight, 11,000 pounds.





No. 7 Special Plunger Brick Machine.

## No. 7 SPECIAL BRICK MACHINE

### SHAFTING, GEARING, PULLEYS AND SPEED

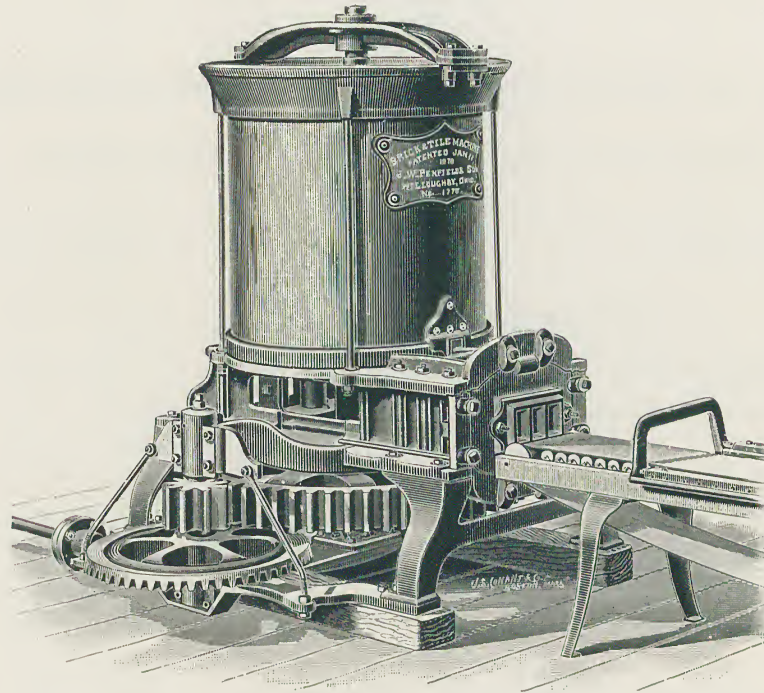
The main shaft is of forged steel,  $4\frac{1}{2}$  inches in diameter, and hexagon where the knives slip over. The machine is back geared 33 to 1. The gearing is extra heavy, and the bevel pinion is of steel. The pulleys are 42 inches in diameter, 8-inch face, and should make about 100 revolutions per minute.

### CAPACITY AND POWER REQUIRED

Under ordinary circumstances and with average clay, the machine has a capacity of 20,000 standard-sized brick per ten hours, and can be operated with a 12 horse-power engine.

### OTHER DETAILS

The top bed plate is provided with suitable lugs, over which the tub fits, preventing it from turning; the tub is held in position by heavy rods, securely bolting the hopper and top bed plate together. The box to the main shaft in the bottom bridge-tree is adjustable. Unless otherwise ordered, the pulley shaft is arranged parallel to the cut-off tables; if specially ordered, the pulley shaft can be arranged at right angles. Height of machine, 6 feet 10 inches; length of sills, 5 feet 9 inches; width from out to out of sills, 3 feet 4 inches; extreme width 5 feet 9 inches; estimated weight, 5,500 pounds.



No. 6 Special Plunger Brick Machine.



## No. 6 SPECIAL BRICK MACHINE

### SHAFTING, GEARING, PULLEYS AND SPEED

The main shaft is of steel, 4 inches in diameter, and forged hexagon where the knives slip over. The gearing is heavy, and the bevel pinion is of steel. The machine is back geared 33 to 1. The pulleys are 42 inches in diameter, 8-inch face, and should make 100 revolutions per minute.

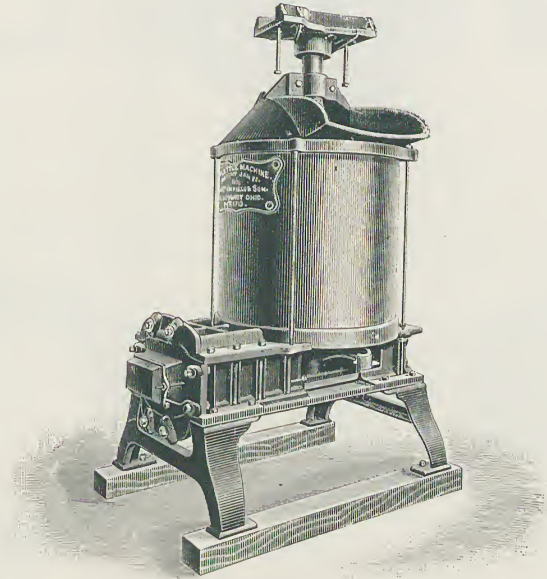
### CAPACITY AND POWER REQUIRED

Under ordinary circumstances and with average clay, the machine has an easy working capacity of 15,000 standard-sized brick per ten hours, and can be operated with a ten horse-power engine.

### OTHER DETAILS

The tub is held in position by four heavy rods extending from the hopper to the top bed plate, also by suitable lugs, fitting over ribs on the bed plate. The bottom box to the main shaft is adjustable. Height of machine, 6 feet 10 inches; length of sills, 5 feet 6 inches; width from out to out of sills, 3 feet 3 inches; extreme width, 5 feet 9 inches; estimated weight, 4,700 pounds.

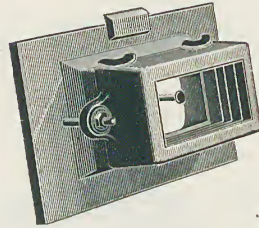
## No. 2 "E" HORSE-POWER BRICK MACHINE



This machine is well adapted to the requirements of those wishing to manufacture brick on a small scale. Should their demand for brick increase and necessitate additional capacity, we can, at any time, furnish suitable gearing, which, when attached, will put them in possession of a first-class steam-power machine. The machine is built extra heavy with this in view.

It has a  $4\frac{1}{2}$ -inch steel shaft, steel cam and steel friction roller, and is of ample and proportionate strength throughout. Estimated weight, 4,000 pounds; capacity 6,000 standard-sized brick per ten hours.

# BRICK DIES FOR PLUNGER MACHINES



Brick Die with Scale Slicker

To adapt our machine to different kinds of clay, we make a variety of styles of brick dies.

## IRON BRICK DIE, WATER LUBRICATING

This die has an iron finishing die set in front of the forming die. Water or oil is allowed to drop upon the bar of clay between the two dies, lubricating the clay so that it passes smoothly through the die. We make two styles of slickers for this die, a short slicker for strong, tough, plastic clay, and a long slicker for clays of a more sandy nature.

## STEAM LUBRICATING DIE BRICK

In this die the forming and finishing dies are bolted tightly together, with steam packing between them. The pipe connecting with the boiler should be about one-half inch in diameter to within a couple of feet of the die and then reduced down to one-quarter inch, and provided with a valve. Only enough steam to lubricate the bar of clay nicely should be used. The steam should be shut off from the die when the clay bar stops plunging, and turned on again just before the next plunge. Where desired, we can furnish combined steam-and-water lubricating dies.

## SCALE FINISHING DIE

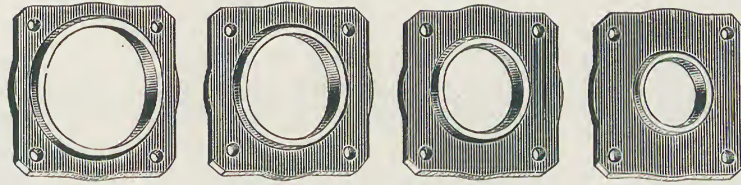
The accompanying cut represents a die provided with this style of slicker which has proven very effective. The casing is of iron lined with wood, to which are attached steel strips or scales. Grooves or channels in the wooden lining conduct water to the surface of the bar of clay. The steel liners can be renewed when worn.

## DRY BRICK DIE

In many clays a dry or non-lubricating die has been found very effective. We make an improved die of this type.

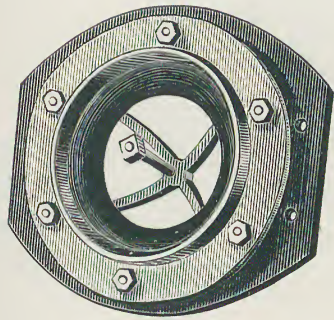


# THE PLUNGER TILE MACHINES

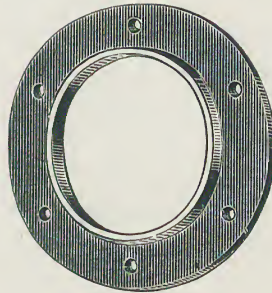


Die Plates for Tile Dies

For description of the general construction of the Plunger Machines, see page 98. The mode of operation, when arranged for tile making, is substantially the same as when used for the manufacture of brick, the main difference being in the cut-off devices. All tile, 8 inches in diameter or smaller, are handled upon a carriage equipped with an endless apron with slats or hollowed-out lags attached. For the smaller sizes of tile a slat belt is used, while for the larger ones, lag belts are employed, the slats and lags being padded, making a soft, elastic cushion for the tile to rest upon. The cutting is performed by means of a wire-strung cutter frame. The larger sizes of tile, 10 inch and 12 inch, are handled by means of the patent dumping cut-off table, which cuts them and deposits them on end upon a suitable pallet board.



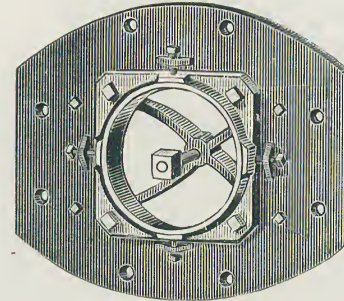
12" Face Plate



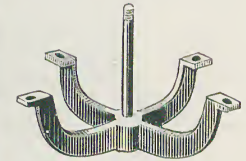
12" Die Plate



Die  
Centers



8" Face Plate,  
with Die Plate Attached



Yoke to  
Face Plate

## TILE DIES AND ATTACHMENTS

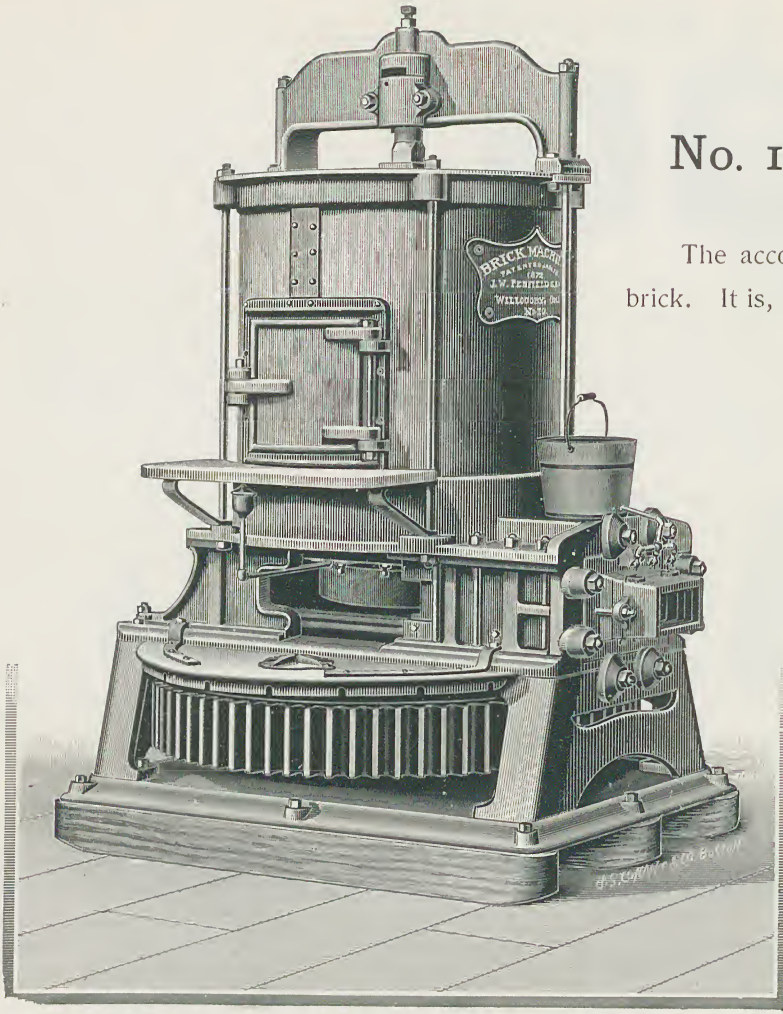
The Plunger Tile Machines are provided with an improved system of dies which can be securely fastened to the machine, accurately centered, and quickly changed. The dies for tile smaller than 4 inches are each complete in themselves, and are attached direct to the machine. The dies from 4 inches to 8 inches are held in position by a special face plate, and the change from one size to another is quickly made, without removing the face plate from the machine. The centers slip upon the core stem in the center of the yoke, being held in position by a nut. The face plate is provided with suitable set screws, by means of which the die can be quickly and accurately centered. The die plates are light and convenient to handle, and yet are not liable to be broken, as the pressure is sustained by the heavy face plate. For 9, 10 and 12-inch dies, a special 12-inch face plate is used.

## No. 15 "S" PLUNGER TILE MACHINE

PATENTED

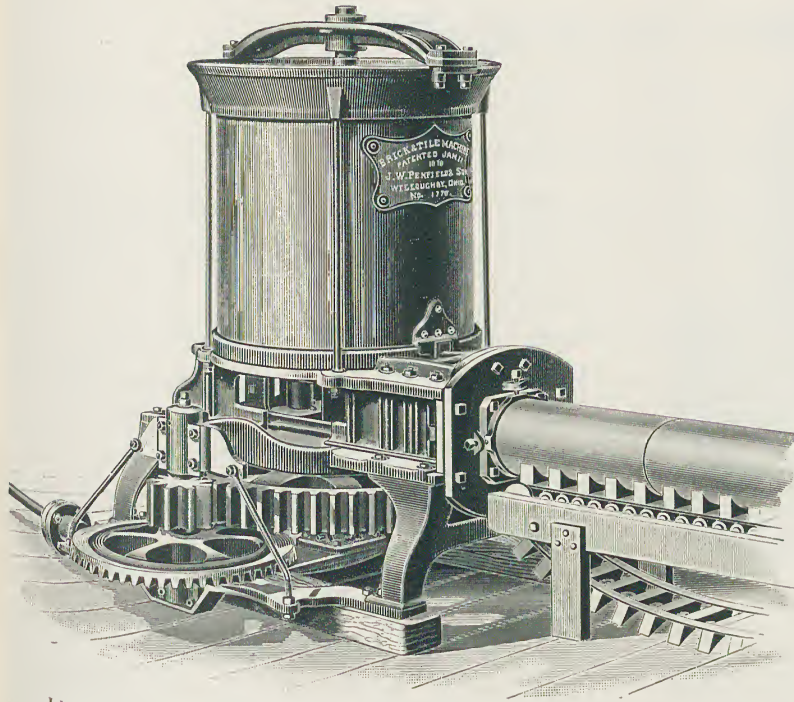
The accompanying cut shows the No. 15 machine as arranged for the manufacture of brick. It is, however, equally well suited for the production of drain tile, the only change necessary being that of die and cut-off table.

The machine is well adapted for the requirements of large tile factories, being capable of producing 18,000 3-inch tile per day, and other sizes in proportion. A 15 to 20 horse-power engine is required to operate it. The machine is built extra heavy throughout, and is back geared 42 to 1. The pulleys are 42 inches in diameter, 10-inch face, and should make about 145 revolutions per minute. The bearings to the main shaft are of gun-metal. The clay box has steel wear plates on the bottom and sides. The plunger-head and cut-off plates are of special pattern to prevent leakage of clay. Height of the machine, 9 feet 2 inches; length of sills, 6 feet 4 inches; width from out to out of sills, 3 feet 4 inches; extreme width, 6 feet 7 inches; estimated weight, 11,000 pounds.





# No. 7 SPECIAL PLUNGER TILE MACHINE



This machine is suitable for tile factories of medium capacity.

## SHAFTING, GEARING, PULLEYS AND SPEED

The main shaft is of forged steel,  $4\frac{1}{2}$  inches in diameter and hexagon where the knives slip over. The machine is back geared 33 to 1. The gearing is extra heavy, and the bevel pinion is of steel. The pulleys are 42 inches in diameter, 8-inch face, and should make about 100 revolutions per minute.

## DIES

The machine is made with an enlarged front to facilitate the manufacture of large tile, and is furnished with the improved tile dies previously described.

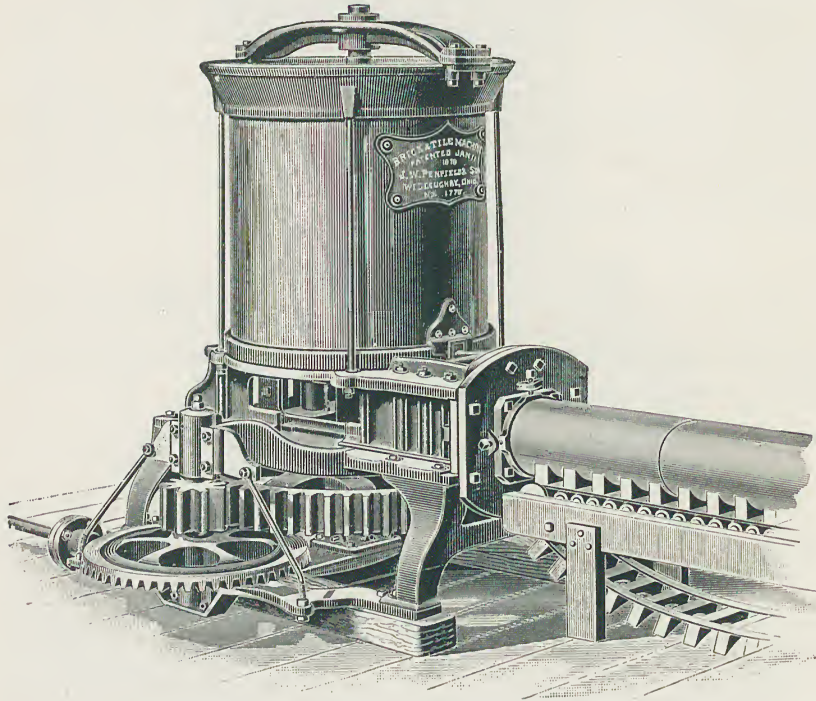
## OTHER DETAILS

The lower end of the main shaft is held by an adjustable box in a bridge-tree, which also holds the boxes of the bevel gearing. Thus the gearing is self-contained, and is easily kept in alignment.

Unless otherwise ordered, the pulley shaft is arranged parallel to the cut-off table. If specially ordered, the pulley shaft can be arranged at right angles. The driving cam and friction roller are of steel. Height of machine, 6 feet 10 inches; length of sills, 5 feet 9 inches; width from out to out of sills, 3 feet 4 inches; extreme width of machine, 5 feet 9 inches; estimated weight, 5,500 pounds; capacity 14,000 3-inch tile per day; other sizes in proportion; power required, 12 to 15 horse-power.



## No. 6 SPECIAL PLUNGER TILE MACHINE



pounds; capacity, 10,000 3-inch tile per day; other sizes in proportion; power required, 10 to 12 horse-power.

This machine is built on the same plan as the No. 7 Special, but is smaller and of less capacity.

### SHAFTING, GEARING, PULLEYS AND SPEED

The main shaft is of forged steel, 4 inches in diameter, and hexagon where the knives slip over. The gearing is heavy, and the bevel pinion is of steel. The machine is back geared 33 to 1. The pulleys are 42 inches in diameter, 8-inch face, and should make 100 revolutions per minute.

### TILE DIES

The Machine is provided with the improved dies previously described.

### OTHER DETAILS

The bottom box to the main shaft is adjustable. The driving cam and friction roller are of steel. Height of machine, 6 feet 10 inches; length of sills, 5 feet 6 inches; width from out to out of sills, 3 feet 3 inches; extreme width, 5 feet 9 inches; estimated weight, 4,700

## No. 2 "E" H. P. PLUNGER TILE MACHINE

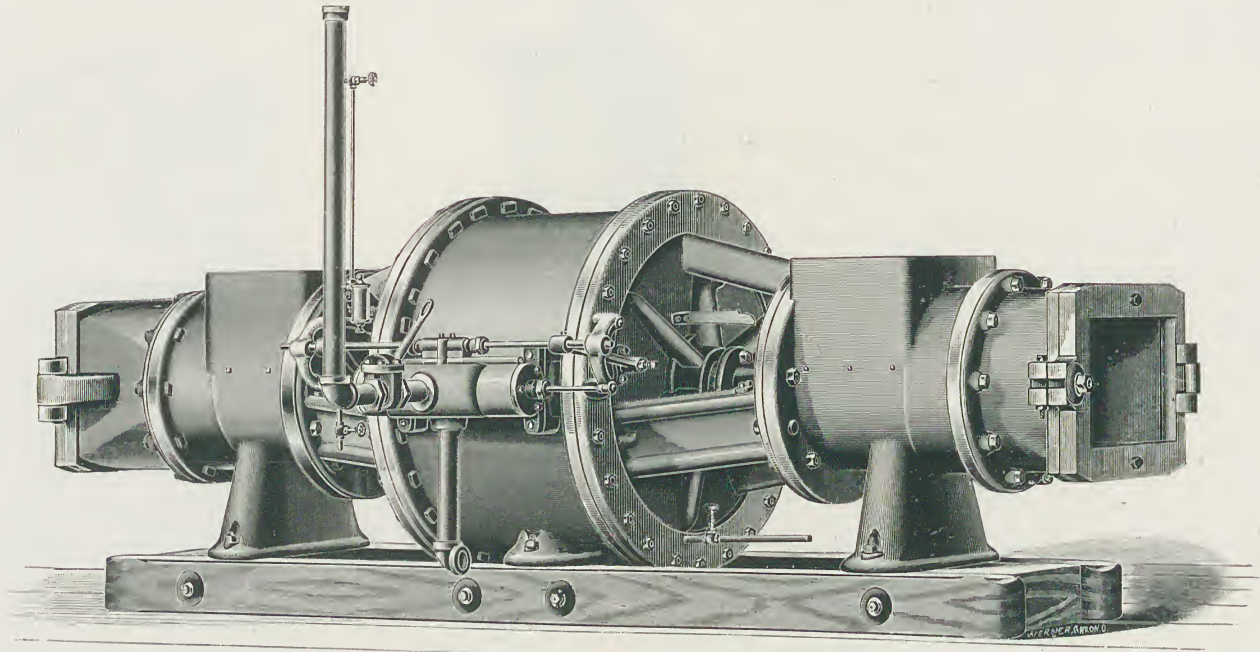


The cut shows the horse-power machine arranged with brick die. It is, however, equally well suited for the manufacture of drain tile, and is provided with the same style of improved dies as is furnished for the larger machines. Parties wishing to engage in the business on a small scale to start with will find this an excellent machine to purchase, as, if the demand for tile should increase and necessitate a change to steam power, we can at any time furnish suitable gearing, which, when attached, will put them in possession of a perfect steam power machine. We build the machine extra heavy with this in view, putting in a heavy steel shaft, heavy grinding knives and mud wing; in fact, making it of proportionate strength throughout.

The machine has an enlarged front, similar to that on the Nos. 6 and 7 Special Machines, thus nicely adapting it to the manufacture of large tile. Weight of machine, 4,000 pounds; daily capacity, 8,000  $2\frac{1}{2}$ -inch tile; other sizes in proportion. Power required, two to four heavy horses; help required, two men and two boys.

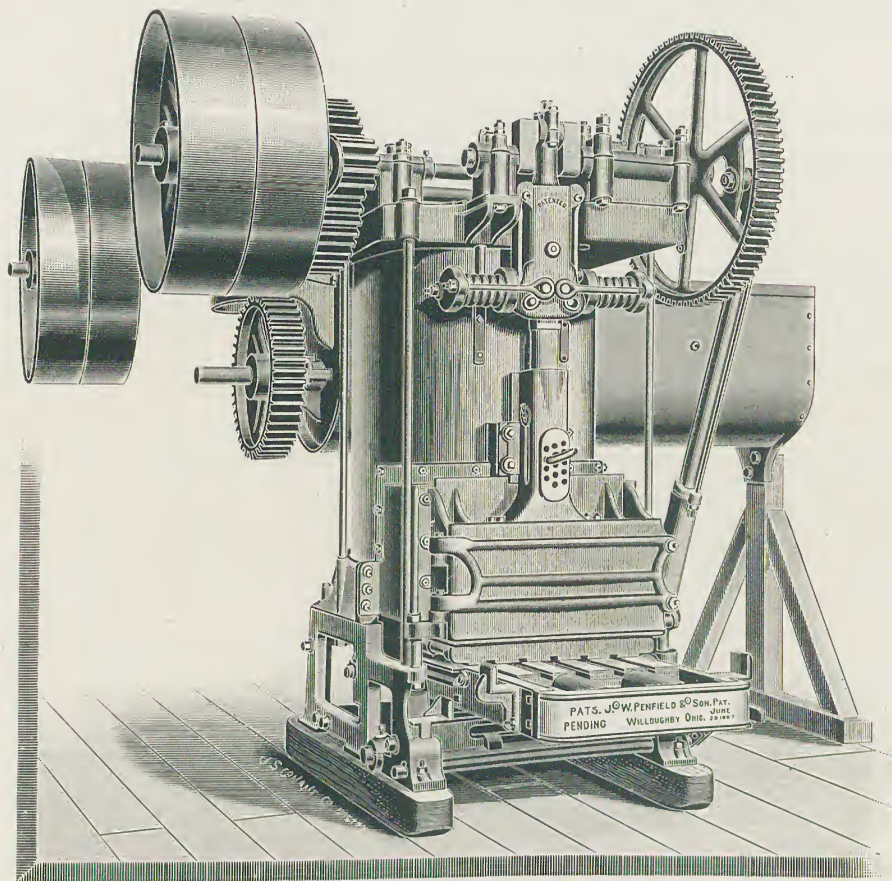
When geared for steam power, it has the same capacity as the No. 6 Special Machine.

## DOUBLE-WORKING STEAM PRESS



The cut herewith shown represents a Double-Working Horizontal Steam Press, provided with two clay cylinders, one at each end of the steam cylinder, and plunging alternately at each end. This machine is extra large, powerful and of large capacity. It is well adapted for use in the manufacture, on a large scale, of fire-proof building material, terra cotta lumber, and hollow ware of all kinds.





Upright Stock Brick Machine and Independently Geared Pug-Mill.

PATENTED.

# UPRIGHT STOCK BRICK MACHINE AND PUG-MILL

## MODE OF OPERATION

The clay is generally dumped upon a platform, level with the top of the pug-mill, into which it is then shoveled. If a crusher or disintegrator is used, this is usually set on the same floor as the brick machine, and the clay elevated into the pug-mill from the crusher or disintegrator.

If the clay is not sufficiently moist, water is added at the pug-mill. The pug-mill tempers and mixes the clay, and feeds it into the brick machine, where it receives additional tempering, being forced into the pressing chamber by the mud-wing. The horizontal plunger then moves forward, compressing the clay and holding it in position in the pressing chamber, while the vertical plunger moves down and fills the mold. The molds should be evenly sanded, either by means of a mold-sanding machine, or by hand, taking care to use only the best of sharp, clean, fine sand. The molds are fed in at the left-hand side of the machine near the bottom, just back of the filled mold. At each revolution of the machine, the mold-pusher carriage moves the empty mold forward in position under the jack mold, at the same time pushing the filled mold upon the mold table in front of the machine. The operator then scrapes off the surplus clay from the top of the mold by means of a steel blade, called a strike. If the brick are to be dried in racks, or artificial dryers, they are dumped from the molds as they come from the machine, depositing the brick upon pallet boards, which are loaded upon the dry cars, or put in the drying racks. If the brick are to be dried upon the open yard, however, the filled molds are loaded upon barrows and conveyed to the drying ground, and the brick there dumped from the molds.

## GENERAL DESCRIPTION

The cuts on pages 88 and 92 give a good idea of the general appearance of the machine, the latter cut containing a sectional view of the clay box. The machine can be furnished either with or without pug-mill, as may be desired. We recommend the use of a pug-mill, however, in all cases. The pug-mill and brick machine are attached to each other, but are independently geared, and driven by separate pulleys.

## SHAFTING, GEARING, PULLEYS AND SPEED

The main shaft of the brick machine is of forged steel, square where the mud knives go on, and turned off round at the ends. The main

shaft of the pug-mill is square and turned round at the ends. The gearing throughout is heavy, and of improved design. The pressing and pugging is done by separate gearing, thus making the machine doubly strong. The pulley shaft of the brick machine makes 15 revolutions for each moldful of brick produced. The pug-mill is back geared  $3\frac{1}{2}$  to 1, and should make about  $1\frac{1}{2}$  revolutions of the pugging shaft to each moldful of brick the machine produces, or about  $5\frac{1}{4}$  revolutions of the pulley shaft on pug-mill to 15 revolutions of the pulley shaft on brick machine. Thus for 10 molds per minute, the brick machine pulley shaft should make 150 revolutions, and the pug-mill pulley shaft about 52 revolutions.

### **TUBS**

The brick machine tub is 54 inches high and 39 inches in diameter, and is made of heavy boiler plate. The pug-mill tub is 9 feet long, and 2 feet 6 inches wide at the top, and is made of heavy boiler plate, with cast-iron ends. It is open on top the entire distance, except  $2\frac{1}{2}$  feet at the end. The pug-mill tub is provided with three heavy rods across the inside of the tub to prevent clay from swinging while being pugged.

### **KNIVES AND MUD WING**

The brick machine is provided with double knives, having cast hub and wrought blades, the blades being secured in the hubs of the knives by wrought pins. The brick machine mud wing is cast-iron, with a wrought-iron end bolted to the wing. Both this wrought-iron end and the wrought blades in the mud knives can be replaced without removing the hubs from the shaft. The pug-mill knives and mud wing are extra heavy and strong.

### **CLAY BOX AND JACK MOLD**

All four sides of the clay box are planed off. The back of the clay box is self-adjusting, taking up any wear on the plunger, and at the same time ensuring the plunger moving freely and without binding. The front of the clay box is hinged. The jack mold is planed off at the bottom and top, and slides into the clay box easily, being held in position by tongue and groove. It can be quickly removed or replaced.

### **MOLD STOP**

The machine is provided with an adjustable mold stop, stopping the mold at the proper place when fed into the machine.

### **MOLD TABLE**

The mold table can be adjusted to any height by turning two hand screws under the same, or it can be dropped down instantly by means of a lever.



# UPRIGHT STOCK BRICK MACHINE AND PUG-MILL

## MODE OF OPERATION

The clay is generally dumped upon a platform, level with the top of the pug-mill, into which it is then shoveled. If a crusher or disintegrator is used, this is usually set on the same floor as the brick machine, and the clay elevated into the pug-mill from the crusher or disintegrator.

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### **TUBS**

The brick machine tub is 54 inches high and 39 inches in diameter, and is made of heavy boiler plate. The pug-mill tub is 9 feet long, and 2 feet 6 inches wide at the top, and is made of heavy boiler plate, with cast-iron ends. It is open on top the entire distance, except  $2\frac{1}{2}$  feet at the end. The pug-mill tub is provided with three heavy rods across the inside of the tub to prevent clay from swinging while being pugged.

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The brick machine is provided with double knives, having cast hub and wrought blades, the blades being secured in the hubs of the knives by wrought pins. The brick machine mud wing is cast-iron, with a wrought-iron end bolted to the wing. Both this wrought-iron end and the wrought blades in the mud knives can be replaced without removing the hubs from the shaft. The pug-mill knives and mud wing are extra heavy and strong.

### **CLAY BOX AND JACK MOLD**

All four sides of the clay box are planed off. The back of the clay box is self-adjusting, taking up any wear on the plunger, and at the same time ensuring the plunger moving freely and without binding. The front of the clay box is hinged. The jack mold is planed off at the bottom and top, and slides into the clay box easily, being held in position by tongue and groove. It can be quickly removed or replaced.

### **MOLD STOP**

The machine is provided with an adjustable mold stop, stopping the mold at the proper place when fed into the machine.

### **MOLD TABLE**

The mold table can be adjusted to any height by turning two hand screws under the same, or it can be dropped down instantly by means of a lever.

## PLUNGERS

The machine is provided with both horizontal and vertical plungers. The horizontal plunger "o" pushes the clay forward into the pressing box, and holds it there until the vertical plunger descends and fills the molds, thereby ensuring the even filling of the molds, and the securing of six perfect brick in each mold. The length of stroke of the vertical plunger can be varied 6 inches, which is more than sufficient to meet the requirements of clay in any condition of temper. In case it is desired to change the pressure, the regulating pin is inserted in a higher or lower hole in the plunger, according as more or less pressure is required. Any change in position of the regulating pin should be made when the plunger is rising, and not when it is descending. If it is desirable to stop pressing at any time, this can be accomplished by pulling out the regulating pin.

## MOLD PUSHOUT

The mold pusher device consists of a carriage provided with four wheels connecting to the front rocker arms, which in turn are connected with the same crank wheel that operates the vertical plunger. Thus at each revolution of the crank wheel, directly after the vertical plunger has filled the mold, the mold pusher carriage moves forward, pushing the mold into position under the jack mold. The mold pusher arms can be adjusted to suit the size of mold used, pushing it forward to just the right place under the jack mold.

## RELIEFS

The vertical plunger has a double escapement or relief. In case a stone or obstruction gets under the plunger, the dogs or catches fly out, releasing the plunger and obviating danger of breakage. When the machine has completed its revolution the escapement re-engages itself automatically. In case the obstruction remains, the same operation will be repeated until the machine can be stopped and the obstruction removed. The relief is equally effective in case the regulating pin should be inserted too low in the plunger, making the pressure too great.

The mold pressure device is also provided with a single relief, which can be so adjusted that, if a mold gets caught in any way, the escapement will operate, and no harm be done to mold or machine.

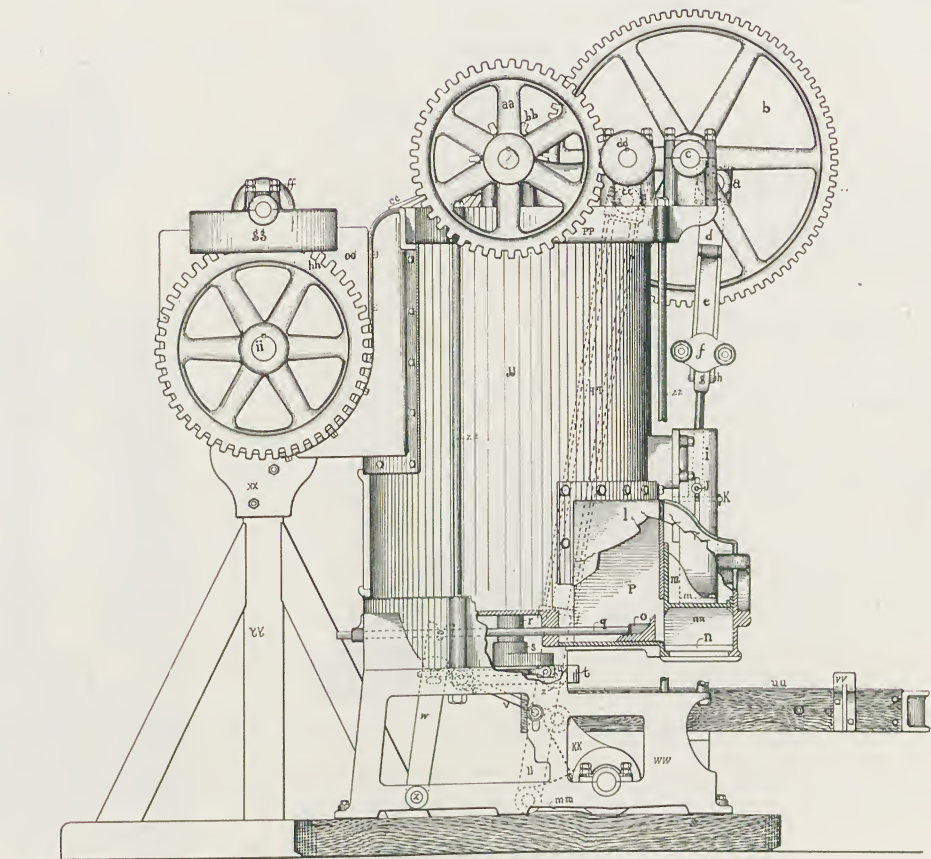
These escapements can be regulated to any tension desired up to the full power of the springs.

## ADJUSTMENTS

All machines are run at our works and properly adjusted before shipment. Occasionally when set up in the yard, filled with clay and



the pressure applied, slight re-adjustments are necessary. This we have fully provided for, and any modifications or adjustments can be easily and quickly made.



Sectional View, Showing Arrangement of Plungers, Etc.

## CAPACITY AND POWER REQUIRED

A fair average speed is 10 molds per minute, or 25,000 to 30,000 brick per 10 hours. The speed can be increased or diminished if desired, as the capacity of the machine is only limited by the speed at which it is operated, and by the ability of the men to handle the brick as produced. The power required to run the machine alone is 15 horse-power, and for the machine and pug-mill, 25 horse-power.

## DIMENSIONS

Height above floor level, 10'.

Height of mold table, 1' 10''.

Height of pug-mill hopper above floor level, 7'.

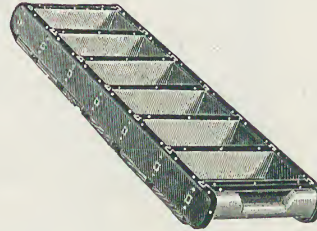
Floor space for machine alone, 5' x 7' 6''.

Floor space for machine with pug-mill, 9' x 10'.

Weight of machine, estimated, 8,000 lbs.

Weight of machine with pug-mill, estimated, 11,000 lbs.

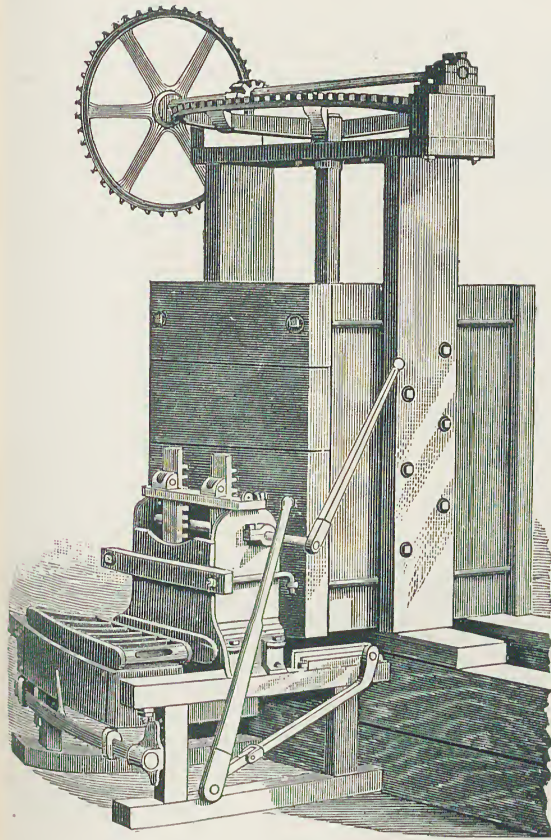
## MOLDS



We are prepared to furnish first-class molds in quantities to suit our customers. The molds, unless otherwise specified, have turned hardwood handles and body made of cherry. In ordering, give exact inside size of mold, number of brick, thickness of partitions, and total length of mold.

## MOLD SANDERS

We are prepared to furnish mold sanding machines of the most approved types, at market prices.



## THE EAGLE STEAM-POWER BRICK MACHINE

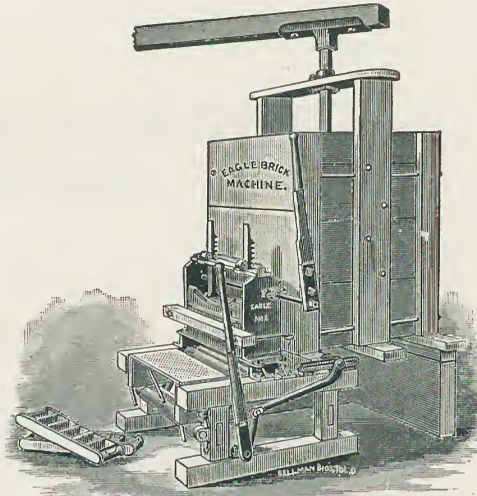
### SAND MOLDING

The Eagle Brick machine for steam power. Complete with ten molds, pulley 30 x 6 inches, or a sprocket wheel. Speed required, 35 to 40 revolutions per minute, requiring about four horse-power. Capacity per day, 16,000 brick. Weight of machine complete, 1,900 pounds. While all other machines are generally operated without the use of sand, the Eagle Brick Machine requires a fine, clean sand to sand the molds. This is a very essential part to insure the successful molding of the brick, to prevent them from sticking in the molds.



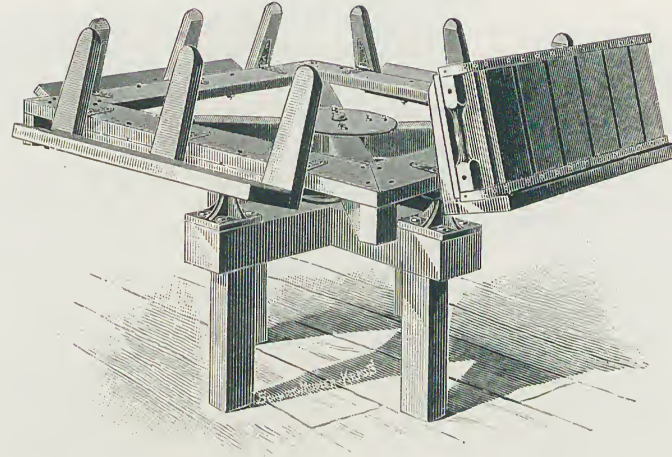
# THE EAGLE HORSE-POWER BRICK MACHINE

## SAND-MOLDING



This machine has stood the test longer than any other machine of its kind on the market, and is a standard article of manufacture with us. The low price and simplicity of its construction enables any brick maker, however limited in means, to procure one. This belongs to a class commonly called soft mud machines. The clay being used of same consistency in temper as that for hand molding. Six brick are forced into the mold by the pull of the lever, and another pull projects the full mold and inserts the empty one under the press box. With our improved methods in the manufacture of it, we have been enabled to reduce the price to the lowest possible figure, which compels us to sell for cash only. The Horse-Power Brick Machine complete with five molds. Power required, one horse; capacity per day, 12,000 brick; weight of machine with pug-mill, 1,500 pounds; weight of machine without pug-mill, 600 pounds.

## REVOLVING DUMP TABLE

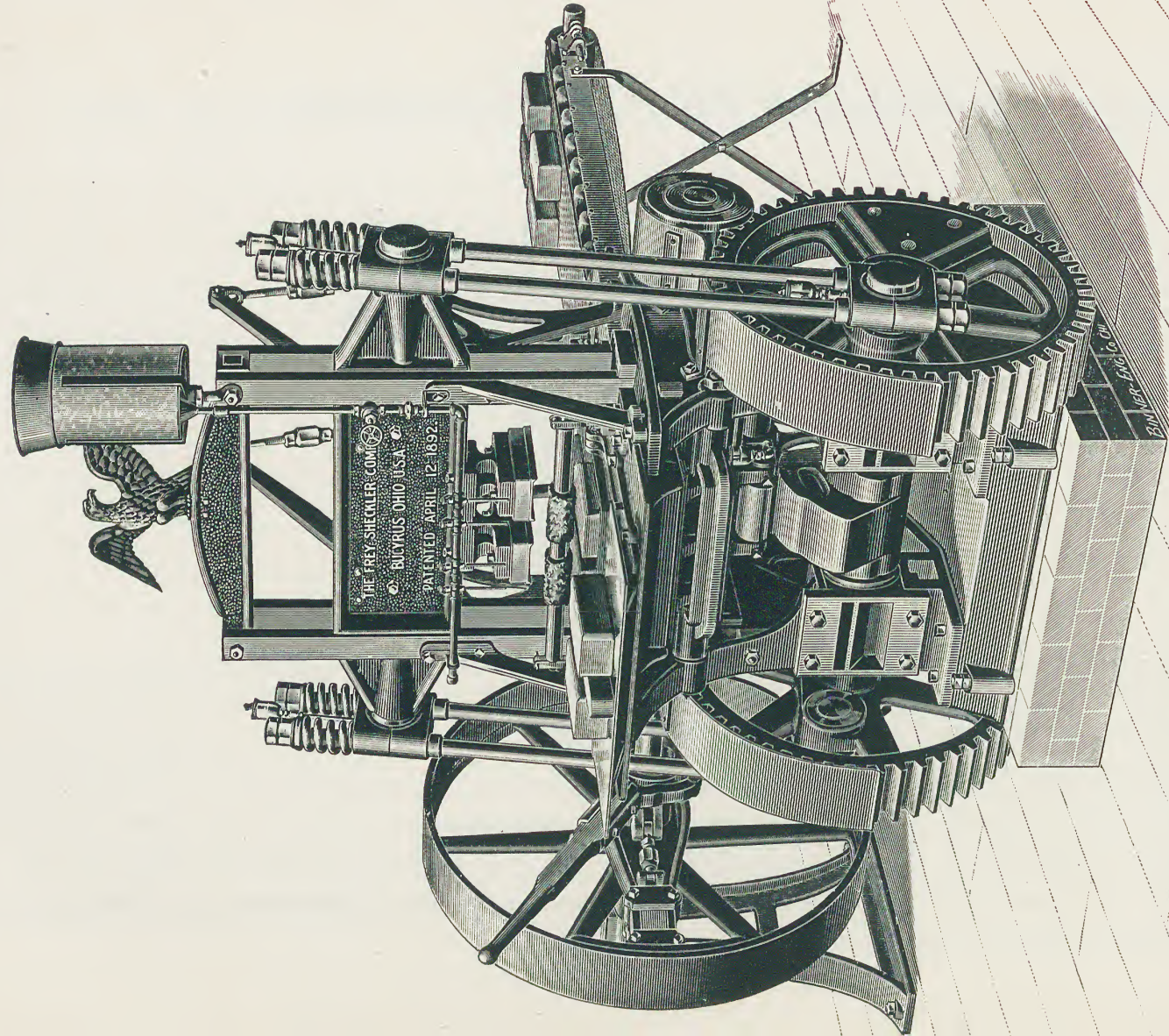


The above cut represents our Revolving Dump Table for dumping bricks on to pallets. It is built in a strong, substantial manner, operates readily and easily, and gives universal satisfaction. We can furnish it arranged for either four or six molds. Weight, 300 lbs.

## STRIKING KNIFE

We manufacture striking knives of two patterns, a long two-handled one and a short single-handled one. The blades are of extra-tempered saw-plate steel, ground to an edge and polished.





The Eagle Double Die Brick Re-Press—Front View.



# THE EAGLE DOUBLE DIE BRICK RE-PRESS

This machine is designed for re-pressing paving brick ; also face brick, in either plain or ornamental shapes. It is a machine of great strength, rapidity and efficiency.

## MANNER OF OPERATION

The blanks or plain blocks of clay to be repressed are first produced on a brick machine, and, if necessary, are allowed to partially dry or cure until they are of the proper consistency for repressing. Where the blanks are made on a sand molding machine, they should be dried until they are of such a consistency that they can be safely hacked five to seven high. If the blanks are made on a stiff clay, die-working machine, much time need not elapse between the production of the blanks and the repressing. Ordinarily a few hours is amply sufficient, while in many cases the brick are molded stiff enough on the brick machine to repress at once. The bricks are placed on the table into an automatic feed and forced automatically into the mold box and are subjected to a pressure from the top and bottom. The lower pressure foot, after applying its force upon the bricks, continues its upward movement, thus carrying the re-pressed brick to the top of the press mold. The automatic feeder with two more brick comes in contact with the two brick already re-pressed, forcing them to the carrying-off belt, from which the hackers convey them to drying cars or trucks, preparatory to taking them into the drying tunnels.

## ITS CONSTRUCTION

The main shaft is made of 5-inch diameter hammered steel, thus reducing its liability of breaking to the minimum.

The gearing is very strong and massive, having 6-inch face.

The four side rods connecting the heavy gearing with the upper cross-head are made of hammered steel.

The press mold into which the brick drop is stationary. The pressure feet, which are attached to the upper cross-head, exert a downward pressure, whilst the lower pressure is exerted by a cam on the main shaft operating in connection with the lower cross-head. No other re-press gives the brick both an upper and lower pressure.

This machine is supplied with a double mold box, so that two brick are re-pressed at each stroke, thus giving twice the capacity of a single mold re-press without any additional expense. The mold box is planed and fitted nicely, and lined with a special high grade of steel. The oiling devices in connection with the press are automatic.

This machine is very simple in its construction ; it has fewer wearing parts than any other re-press manufactured. It is easy to keep in repair and working order. Its operation is perfect.

## PULLEY, CAPACITY AND POWER

This machine is supplied with our friction clutch pulley, 48 inches diameter, 7-inch face ; speed, 40 to 80 revolutions per minute.

Width of re-press over all, including pulley shaft, 8 feet.

Height over all from top of foundation, 7 feet 3 inches.

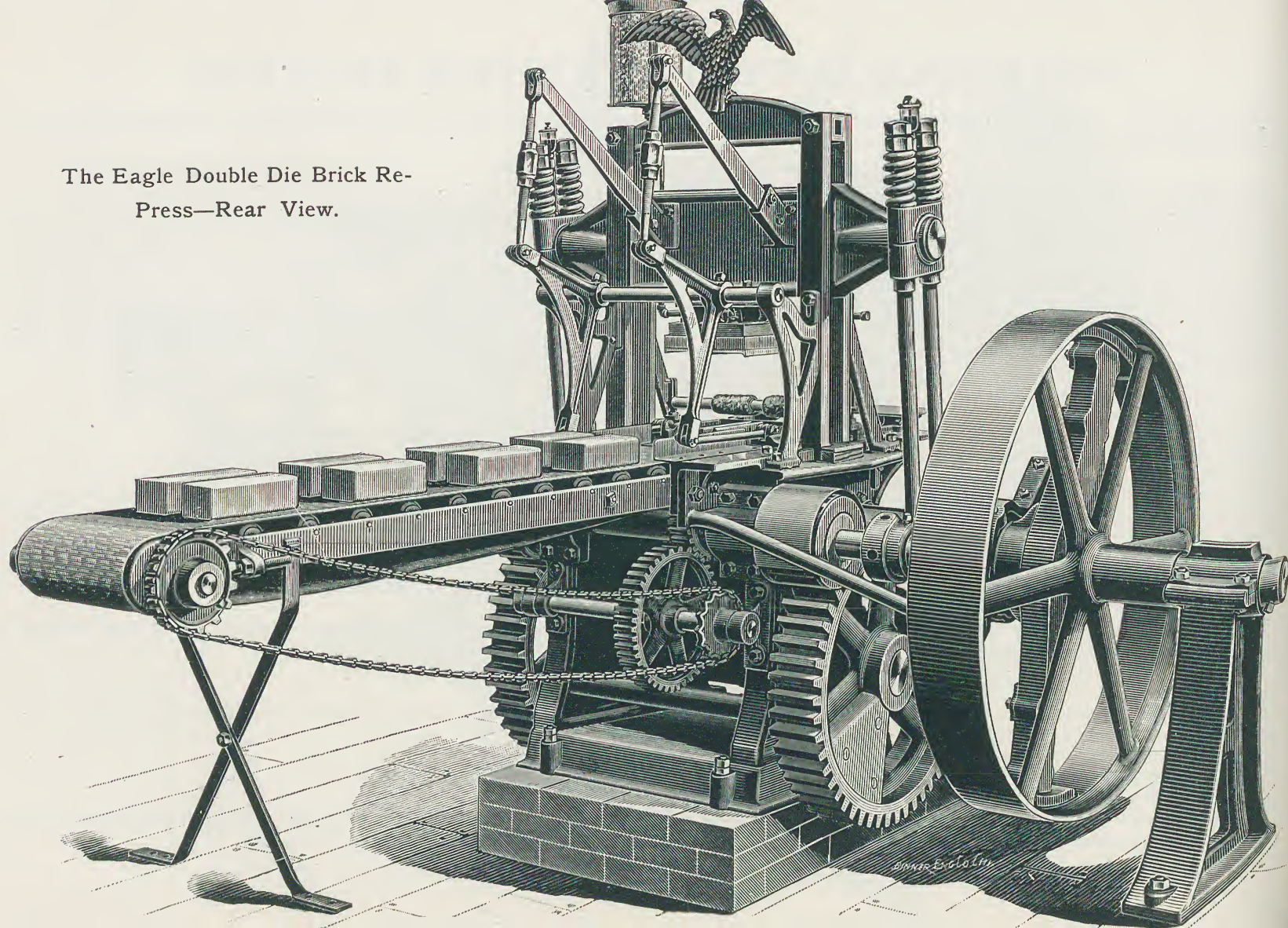
Height from top of foundation to top of feed table, 37 inches.

Width of cast-iron base 2 feet 6 inches ; length, 2 feet 10 inches.

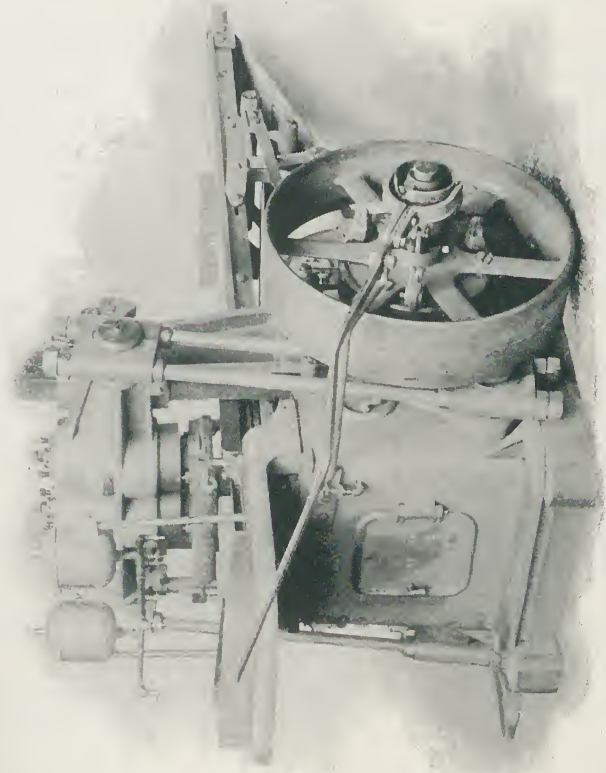
Its capacity is from 10,000 to 28,000 standard size brick per day of 10 hours, according to quality of product desired. The power required is from 1 to 2 horse-power. Weight, 7,500 pounds.



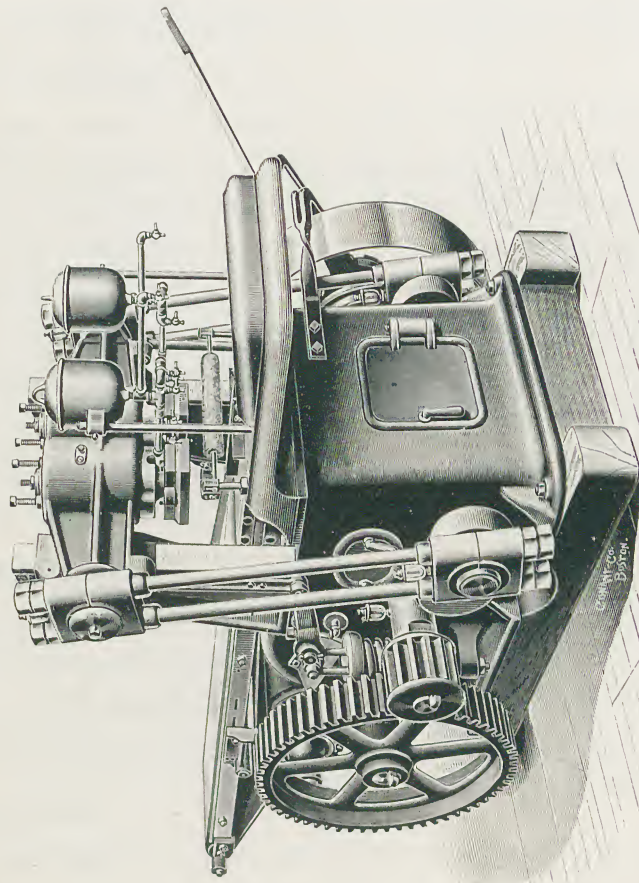
The Eagle Double Die Brick Re-  
Press—Rear View.







No. 4 Double Die Brick Re-Press.



No. 4 Double Die Brick Re-Press.



## No. 4 DOUBLE DIE BRICK RE-PRESS

The foregoing cut represents the No. 4 Double Die Re-Press.

### GENERAL CONSTRUCTION

The machine is of superior design throughout; the working parts under the die are neatly encased in the base of the machine, and yet are readily accessible by means of suitable doors. The machine is built with a surplus of strength throughout, and the weight is low down. The back gearing is of high ratio, and the pulley is arranged for wide driving belt. The bearings are all extra long, and the gearing extra heavy and of the most approved pattern.

### THE PRESSURE

The pressing mechanism is, in effect, a toggle, with the toggle members reversed from the usual arrangement. The amount of pressure can be instantly regulated by means of a simple device in the cross-head above the dies. Each brick is pressed independently of the other. The springs are not attached to the connections, but are in the cross-head directly above the dies, and consequently the cross-head is always square with the dies, no matter whether one brick or two are being pressed at a time, or whether one brick be thicker than the other. Our method of construction secures an extra long dwell on the brick in pressing.

### CROSS-HEAD AND GUIDE

The cross-head is provided with receptacles for two coiled springs, each spring being located directly above the two plungers. The tension of these springs can be quickly adjusted whenever found desirable.

The bearing surfaces of the cross-head on the guide are large and carefully fitted up, reducing the wear to a minimum. The cross-head is provided with a gib or adjustable end piece, by means of which wear can be readily taken up.

### FEEDER DEVICE

The Feeder Device is so constructed that when once adjusted it is positive and accurate in operation. Brick can be fed into the molds as fast as 60 per minute. The brick are fed into the mold when the cross-head is at a standstill on the upper center.

## COUNTER-BALANCE

The re-press is counter-balanced by means of a coiled counter-balance spring communicating with the cross-head by means of connecting bars. As the cross-head and plungers descend, the spring is pulled apart, and when the pressing of the brick is completed, the tension of the spring causes it to contract, lifting the plunger. Thus this spring acts as a counter-balance, taking off all jar and ensuring the noiseless and steady operation of the machine.

## THE DIES

The dies are carefully fitted up, and are arranged with renewable liners, which can be replaced in case of wear. Vents have been found to be objectionable from their tendency to weaken the structure of the brick, frequently causing them to split or crack, consequently we have discarded them, and yet by means of a special device we are able to press fine front brick, all of uniform thickness. The die bottoms can be adjusted to compensate for wear, and the thickness of the brick can be quickly regulated by means of an adjusting device in the cross-head.

## SEPARATING APRON

The Separating Apron is provided with a positive tightener, which can be quickly and accurately adjusted by means of a lever working upon a notched rack.

## LUBRICATION

The press is provided with large oil reservoirs for lubricating the feed table and the roller under which the brick pass. The oil drips can be adjusted to supply the oil at just the rate required for good work.

## PULLEY AND SPEED

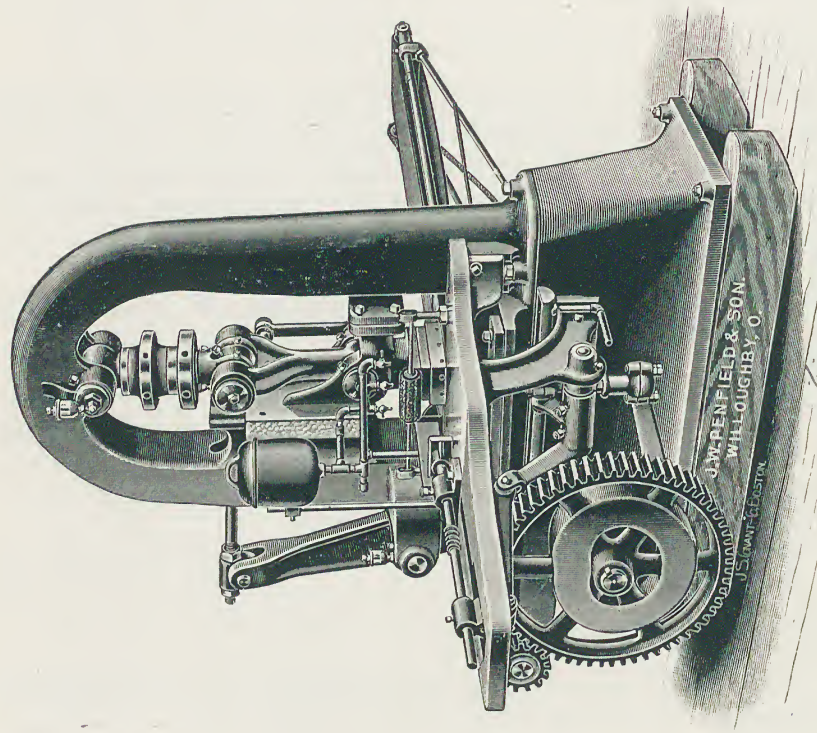
The machine is provided with an Imperial Friction Clutch Pulley, 32 inches in diameter, 8-inch face, which should make from 90 to 135 revolutions per minute, depending upon the capacity desired.

## POWER REQUIRED, CAPACITY

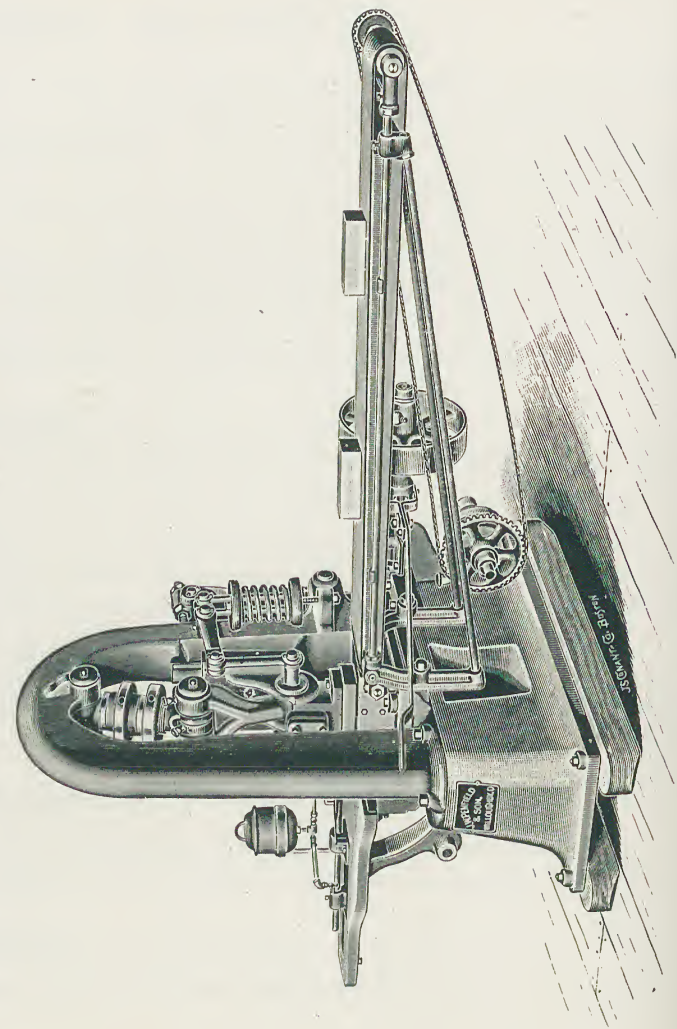
The power required is very small, not to exceed five horse-power. The machine could be run with a five-inch belt, but is arranged for an eight-inch belt, in order to avoid high tension. The machine is capable of repressing brick at the rate of from 20,000 to 30,000 per ten hours.

## SOME DIMENSIONS

Height, 5 feet 1 inch; extreme length, 10 feet; extreme width, 5 feet 6 inches; length of sills, 4 feet 3 inches; width of base, 2 feet 10 inches. Weight, 4,800 lbs.



No. 2 Power Brick Re-Press.



No. 2 Power Brick Re-Press.



## No. 2 BRICK RE-PRESS

The manner of operation of the No. 2 Re-press is substantially the same as of the No. 4 machine, excepting that only one brick is fed at a time.

### GENERAL CONSTRUCTION

The machine is of superior design throughout, massive and strong. It has few parts, and is easy to keep in perfect running order.

### THE PRESSURE

The pressure is exerted by a powerful toggle, accessibly placed above the die, and lessening the liability of clay and grit falling into it and causing increased friction and wear. As the brick are pressed from above, it does away with lifting the die table each time a brick is re-pressed.

### THE DIE

The die is carefully fitted up and can be readily removed and replaced, or one of different size and shape substituted. The press will accommodate a die for making any size ware up to 12" x 12" x 3 $\frac{5}{8}$ ". The height to which the bottom of the die is raised can be readily adjusted by means of a set-screw underneath.

### TOGGLE

The toggle exerting the pressure is very powerful and is provided at each of its bearings with renewable hard metal bushings turning upon hard metal pins. In case of wear this part of the machine can be made as good as new by putting in new pins and bushings, obviating the necessity of replacing the main and heavier parts of the toggle. The toggle can be readily lengthened or shortened, decreasing or increasing the thickness of the brick as desired. The adjustable portion of the toggle is provided with threaded rings, the lower one of which acts as a jamb nut, maintaining the proper length of the toggle at all times.

### COUNTER-BALANCE SPRING

A suitable counter-balance spring is provided, communicating with the cross-head of the plunger by means of connecting bars, thereby preventing jar of the parts and ensuring their steady operation.

## CROSS-HEAD AND GUIDE

The surface of the cross-head working upon the plunger guide is very large, and the bearing surfaces of both of these pieces are carefully fitted up. Consequently the wear is reduced to a minimum, and can be promptly taken up, as the cross-head is provided with a gib of adjustable end piece.

## LUBRICATION

The press is provided with a large oil reservoir, for lubricating the feed table and the oil roller which passes over the bricks as they are fed into the mold.

## PULLEY AND SPEED

The machine is provided with a friction clutch pulley, 18 inches in diameter, 4 inch face. The pulley should make from 75 to 80 revolutions per minute, and the top of the pulley should turn toward the machine.

## POWER REQUIRED. CAPACITY

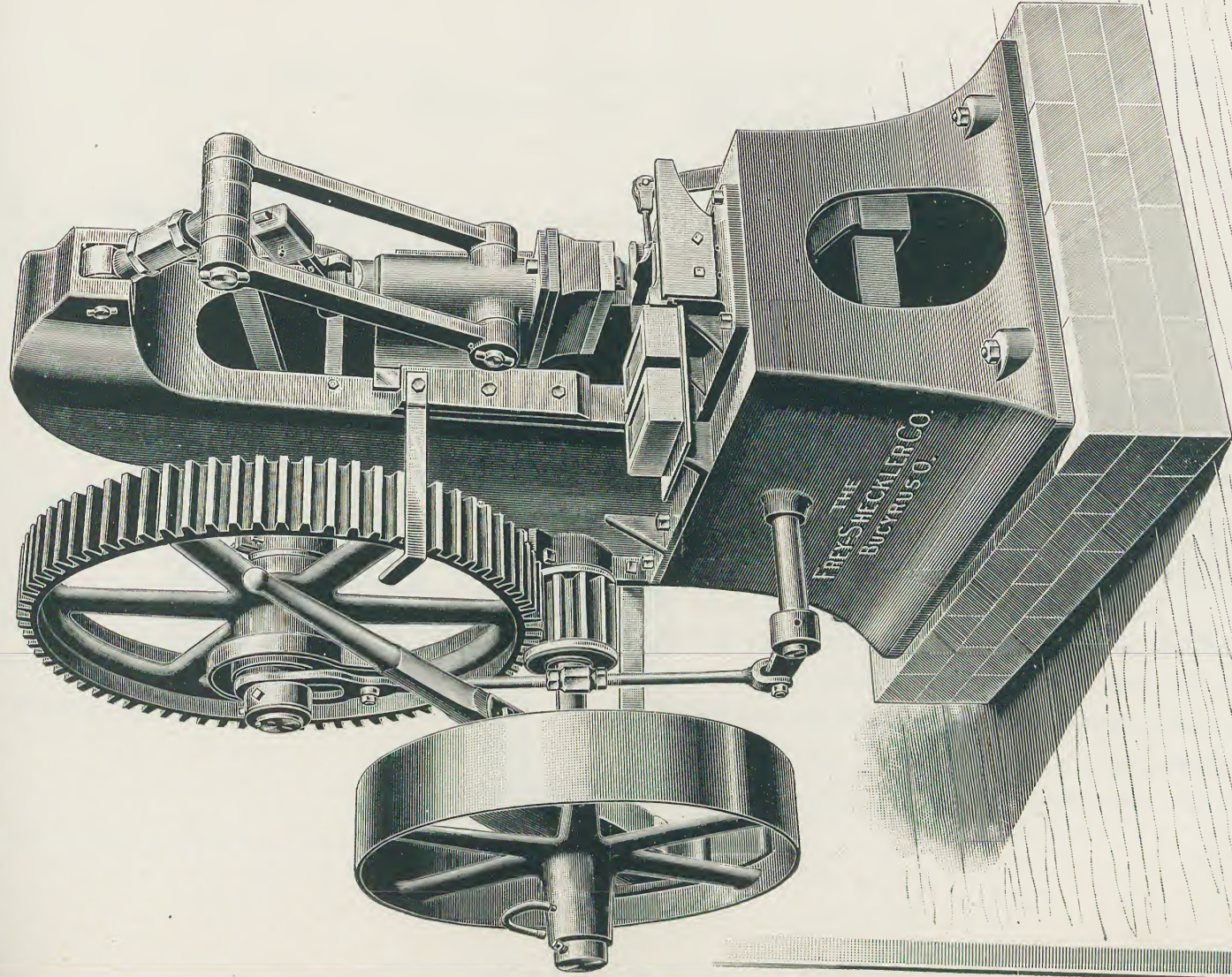
The power required is very small, not to exceed  $\frac{1}{2}$  to 1 horse-power. The capacity of the press is limited only by the ability of the attendants to handle the brick. To secure the best results, however, the speed should not be too great. Ordinarily the pulley speed above mentioned is as fast as is practicable if the best results are desired. When run at the speed above indicated, the pressing capacity would be about 10,000 brick per ten hours.

## WEIGHT, ETC

It weighs, ready for shipment, 4,260 pounds, being the heaviest single die re-press on the market.

Length of sills.....	4' 6".
Width from out to out of sills.....	23".
Height of Machine.....	6' 5".
Width, not including carriage.....	6' 3".





The Panel Re-Press.



## THE PANEL RE-PRESS

We show herewith a cut of our Panel Re-Press.

This is the first and only machine of its class manufactured in the United States. It is especially designed to meet the wants of brick manufacturers producing a high-grade of brick for enameled glazing, where it is very essential to have all of the brick of an exact thickness. It is also adapted for pressed and ornamental brick when a fine finish of product is required.

### THE CONSTRUCTION

This machine is constructed on new and scientific principles, as will be seen in the cut.

The shafts are made of steel. The gears are extra heavy and of a new design. The machine is mounted on an extra heavy cast-iron box bed.

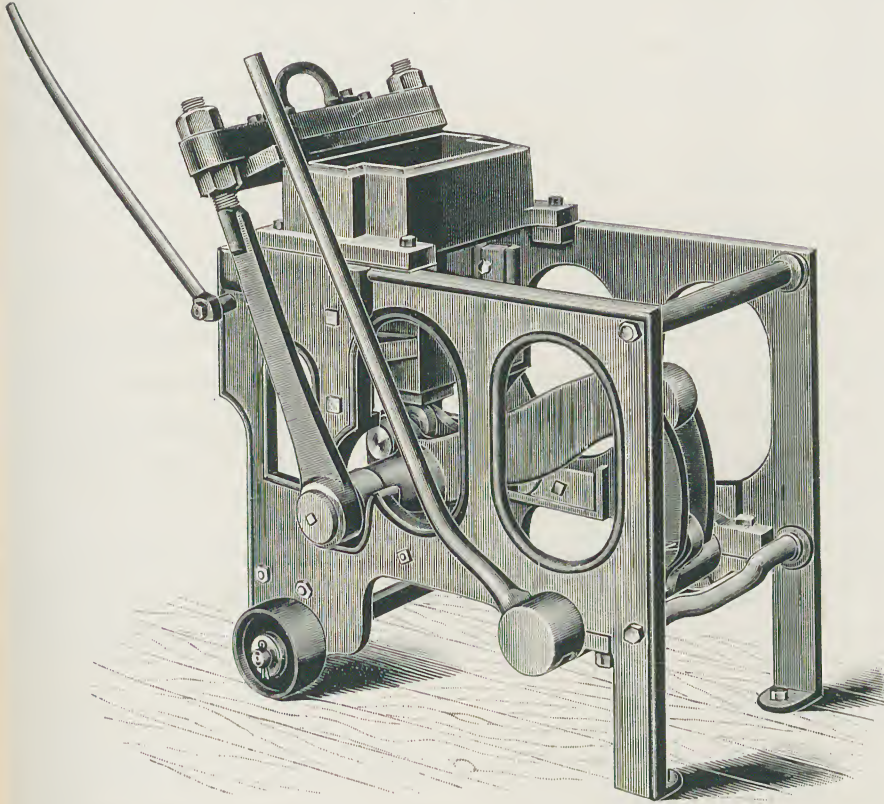
It is simple in construction, easily accessible and no parts liable to get out of order. All of the gears and mechanical movements are so arranged to be entirely free from clay, etc., so as to prevent wear.

### BETTER THAN OTHERS

The feed and discharge of the brick in this machine is strictly automatic. Machines of this class from abroad do not enjoy this ingenious mechanical device, but must be stopped at the pressing of each brick in order that the same may be removed from the mold. This machine is supplied with a friction clutch pulley so as to enable the operator to start or stop the machine at will. Capacity from 6,000 to 10,000 highly finished brick per day.

Weight of machine, 4,500 pounds.

## NO. 1 AND NO. 2 HAND-POWER BRICK PRESS



This press is strong and substantially constructed, being designed for pressing a great variety of shapes.

### THE PRESSURE

The action of this hand-power press is obtained from the long lever, which when drawn back applies a very great amount of power. The short lever in communication with the plunger raises the plunger to the top of the mold so as to lift the brick away.

### THE QUALITY OF PRODUCT

The brick when pressed have a fine finish, are perfectly square and of equal thickness, with edges and corners clearly defined.

This press is manufactured in two sizes, to-wit: Nos. 1 and 2.

No. 1 is adapted for brick up to 9 inches, weight 700 pounds.

No. 2 is adapted for brick larger than 9 inches, weight 900 pounds.

Capacity from 4,000 to 6,000 standard size building brick per day of ten hours.

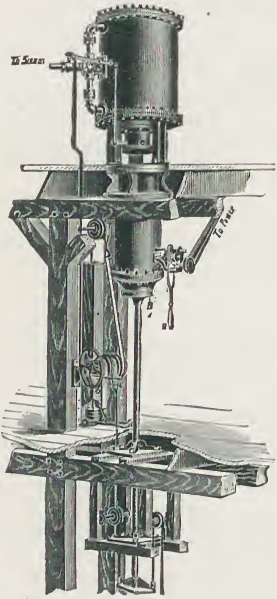
# SEWER PIPE PRESS

## PREPARATION OF CLAY

The clay should be thoroughly ground, and sufficient water incorporated with it so that it will be of the right consistency for molding into pipe. A wet pan or special clay grinding mill (see pages 157-163) is generally used for grinding and tempering the clay if in a moist condition, or

if the material is in a dry state, a dry pan in connection with wet pans or pug-mills can be employed for this purpose.

The clay-preparatory machinery selected should, of course, be regulated by the nature of the material to be manipulated and by its condition as it comes from the clay bank.



## MANNER OF OPERATION

The pipe press is usually fed by an apron conveyor, called a press feeder. In some cases the clay is "balled" by a pug-mill or plunger packer machine, and fed into the press by hand. As soon as the cylinder of the pipe press is charged with clay, the attendant operates the lever working the steam valve, permitting steam to enter the upper half of the steam cylinder, forcing the piston head downward into the clay cylinder, and thereby pressing the clay through the die. The piston head is allowed to descend until enough pipe has issued from the die for one length. If there is not enough clay remaining in the clay cylinder for another length of pipe, the operator gives the reverse movement to the lever, shutting off the steam from the upper half and directing it into the lower half of the steam cylinder, thereby withdrawing the piston head from the clay cylinder, and leaving the press in proper position for re-charging with clay. As soon as the piston head has raised to the proper position, the steam is automatically cut off and the piston comes to a standstill.

If, however, after plunging out one pipe, there is yet sufficient clay in the clay cylinder for one or more additional lengths of pipe, the operator pulls down on the lever only enough to leave it in a midway position, shutting the steam off altogether from the steam cylinder, and allowing the piston head to remain stationary in the clay cylinder until the pipe already made is cut off and removed. The lever is then pulled up again and the piston continues its plunge until another pipe is pressed. This operation is repeated until the clay cylinder is nearly



or quite empty, when the lever is thrown clear down and the piston head withdrawn from the clay cylinder, permitting the clay cylinder to be refilled.

As the pipe emerge from the die, they rest upon the sliding pipe table or follower B. A stationary index or pointer should be provided upon the second floor near the pipe table rod, so that the operator can tell when a length of pipe has issued from the die. When the press stops plunging, the operator then starts the power-cutter, which thrusts the knife through the pipe and cuts it off quickly. The reverse movement withdraws the cutting-knife from the sewer pipe and returns it to its original position. The pipe is then lifted off, the pipe table returned to the die, and all is ready for another plunge.

In making socketed pipe, the socket former takes the place of the plain pipe table, and is held stationary by a locking device until the socket is formed. It is then partly withdrawn and a pallet board placed upon it for the tile to rest on while plunging downward.

### VALUABLE IMPROVEMENT

This pipe press is provided with a valuable improvement (not shown in the cut) by which one man, in a sitting position, readily controls all of the movements of the press, by means of only two levers and a foot treadle. One compound lever works both the steam valve and the power cutter; another compound lever applies the brake and raises the pipe table; while the foot treadle operates the steam locker sometimes used in making a socketed pipe.

### GENERAL CONSTRUCTION

The press is built in a very strong, substantial manner throughout and provided with a number of valuable improvements, securing more perfect operation, greater ease in erecting in position, and perfect alignment of the steam cylinder, spanner and clay cylinder. The diameter of the steam cylinder is 44 inches, and the length of stroke 50 inches. The clay cylinder is 20 inches in diameter.

### IMPROVED STEAM VALVE

The main steam valve is of improved construction, the ports of the valve case being very carefully squared and fitted up the same as in an engine; consequently, there is no wire-drawn steam in the cylinder. This is a decided advantage over presses in which the valve cases are cast rough on the inside. The valve has plenty of lap, so that in opening and closing there is no danger of throwing it over too far.

## PISTON ROD

Ordinarily this Sewer Pipe Press is built with but a single piston rod, 12 inches in diameter, requiring but a single stuffing box the main part of which is cast solid with the steam cylinder in accordance with the best engine practice; consequently, there is no packing between the steam cylinder and the stuffing box. The gland is bored out in alignment with the center of cylinder head and packed the same as in an engine. The valve is in the center of the piston rod, being held in position by a spring.

If preferred, however, we can build the press with a cluster of three piston rods to support and guide the piston in its movements,

## ALIGNMENT

The steam cylinder, spanner and clay cylinder are joined together by a series of male and female joints, simplifying the work of erecting the press in position, and securing permanent alignment of the parts, as they cannot be shifted from their relative positions. This is a decided advantage over the usual mode of construction of the spanner, in which the relative positions of the parts are defined and maintained only by the bolts holding them together. The complete spanner between steam and clay cylinder being cast in one piece, insures more rigidity than where the top and bottom rings of the spanner are cast and fitted up separately and held together by a number of rods.

## CLAY CYLINDER

We can, if desired, arrange the clay cylinder with a renewable bushing. Where preferred, we can make the clay cylinder in two sections.

## COUNTER-BALANCE

The follower or pipe table B, which receives the sewer pipe as it comes from the die, is counter-balanced by weights, the amount of weight used on the counter-balance being varied at times to correspond with the size of pipe that is being made, using heavier weights in making large pipe than in making smaller ones. These weights hold the pipe table in position and support the pipe as it comes from the die, also making it easy to return the pipe table to position after the pipe is cut and lifted off. With the press are furnished a sufficient number of weights to balance the largest size of pipe. The weights in the lower story of the building are not changed, but are allowed to remain the same at all times, the total weight being changed by adding to or subtracting from the weights in the weight box in the second or middle story. This box is open at one side so that the weights can be conveniently and quickly changed by the pressman. This is a decided advantage over

presses in which both counter-balance weights are in the lower story, making it exceedingly inconvenient when necessary to change weights.

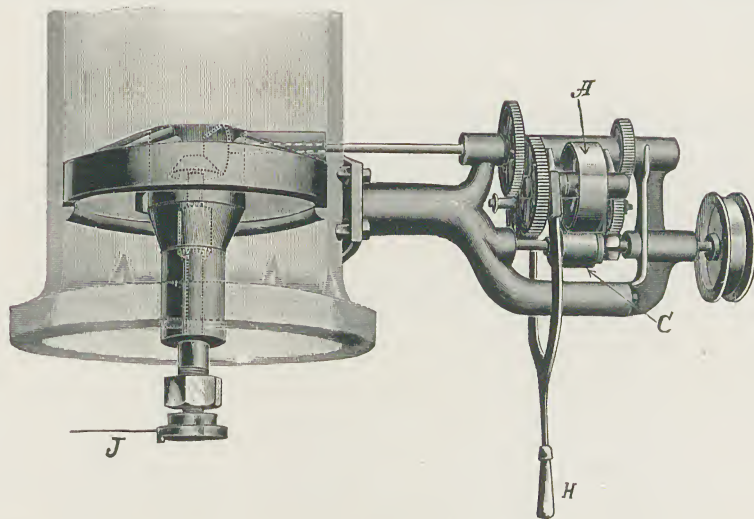
The counter-balance weights are also designed to offer some resistance to the pipe as it emerges from the die, causing it to run more smoothly. Should a pipe at any time show indications of running rough, the amount of friction on the counter-balance can be increased by lightly applying the brake, thereby somewhat retarding the flow of the pipe through the die and allowing it to fill out better, forming smoother ware.

### PIPE TABLE ROD

The rod supporting the pipe table B passes through two guides, each provided with four rollers, with faces having circular grooves, holding the rod in position and alignment.

### THE POWER CUTTER

The accompanying sectional view will give an idea of the general construction of the bottom of the cylinder, containing the three-armed steel yoke or bridge-tree for holding the hollow core stem in which the die center is attached. The cut also shows how power is transmitted



to the power cutter by means of miter gears located inside of the steel yoke and communicating with the knife case and knife by means of spindles passing through the hollow core stem. Back of the friction pulley A is another friction pulley of equal size, and by shifting the lever



back and forth the friction roller C is brought in contact with one or the other of these friction pulleys, imparting a backward or forward movement to the mechanism driving the power cutter.

The mechanism actuating the knife J is concealed in the circular case to which the knife is attached. This concealed mechanism operates that, when set in motion in the right direction, it extends the knife and gives it a circular movement, thereby thrusting it through the pipe and cutting it off quickly. The reverse movement of the lever withdraws the knife from the pipe. The operator then allows the lever H to return to its normal vertical position and the cutting mechanism comes to a standstill and so remains until another pipe is ready to be cut, when the operation is repeated.

By the improvement mentioned on page 139, the same compound lever that operates the steam valve also controls the operation of the cutter.

All of the movements of this cutter are positive, insuring positive and accurate operation. This is a decided advantage over pipe cutters in which centrifugal force is relied upon to throw out the knife blade, cut the pipe off, and withdraw the knife. We furnish knives of different lengths for cutting different sizes of pipe.

### YOKE

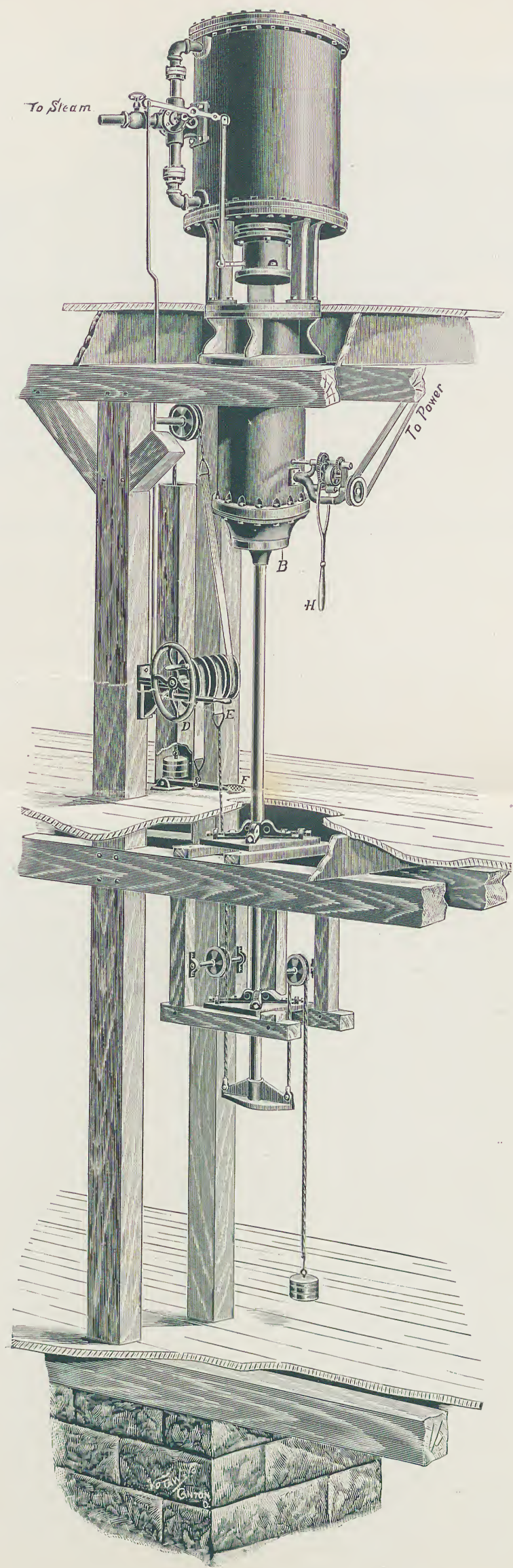
The yoke or bridge-tree sustaining the core stem is extra heavy, and is made of cast steel with corrugated or notched arms, thus roughening the clay and facilitating its cementing firmly together after passing the yoke.

If preferred, we can arrange to have the core stem suspended from the top, above the clay cylinder, instead of being held by a yoke in the clay cylinder as shown in the cut.

### CAPACITY, POWER REQUIRED, ETC

Owing to the unusually great length of stroke, the press is especially well suited for making a large number of pipe with one filling of the clay cylinder, thereby saving time that would otherwise be occupied in refilling the cylinder, and rendering it possible to secure greater speed and better results in the production of all sizes of pipe. The capacity of the press, however, depends largely upon the skill and activity of the operators. For this reason (basing our calculations, say, upon 24-inch pipe) the capacity of the press might vary from 500 to 1,000 pipe of this size per ten hours, the latter named figure being a possibility under favorable conditions, and with expert operators.

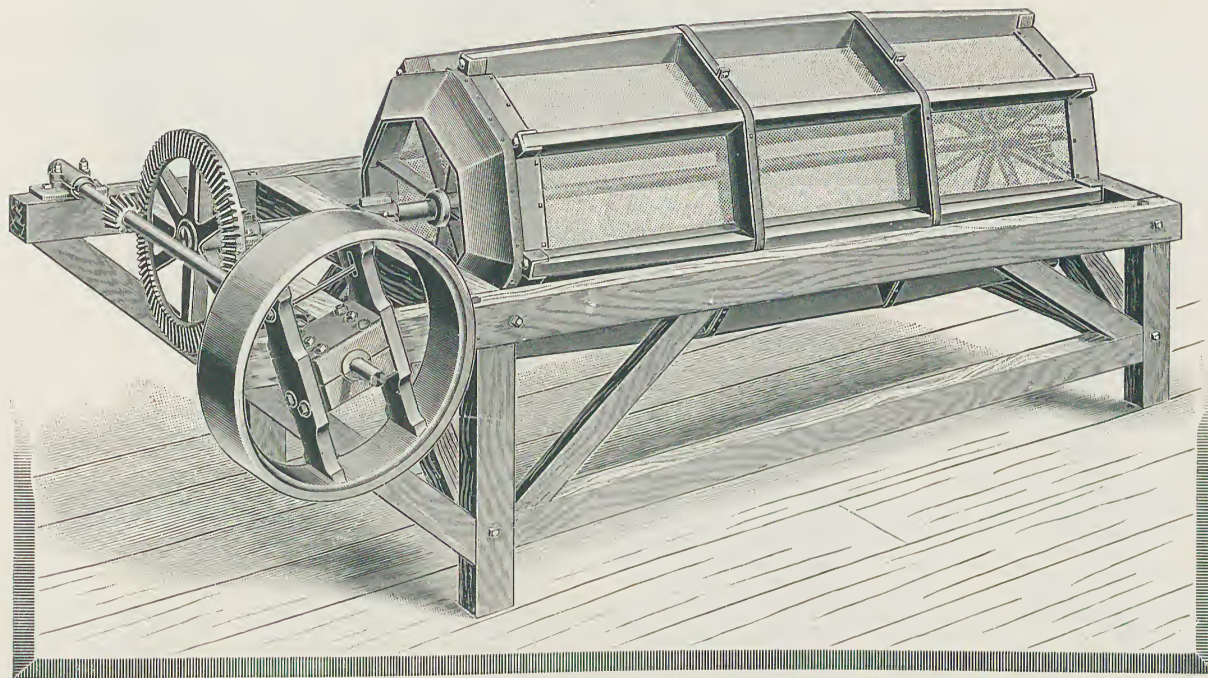
To operate the press successfully requires about a 50 horse-power boiler, carrying 100 pounds of steam. Weight, 14,000 pounds.







## OCTAGON SCREEN



This cut shows our revolving Octagon Screen. The cylinder is 9 feet long, 40 inches diameter, covered with steel plates; the perforations are  $\frac{1}{8}$ -inch round, but can furnish any size perforation desired. This Screen is strong and substantially constructed; the spiders at each end of the cylinder are cast iron.

The driving pulley is 34 inches in diameter, 8-inch face, and speeded at 72 revolutions per minute. The cylinder revolves 12 revolutions per minute. Weight of screen with wood frame, 2,650 pounds; weight of screen without wood frame, 1,800 pounds.

## DRY AND WET PANS

For successfully preparing many kinds of fire clay, also shale and slate used for paving brick, and for grinding burnt brick or pipe for grout, etc., Dry or Wet Pans are a necessity; in fact, are the only practical machines as yet devised for this purpose.

The Wet Pans are particularly adapted to handling material in a moist condition, while for use in Dry Pans it should be practically dry, so that when ground, it will readily pass through the screen plates without clogging.

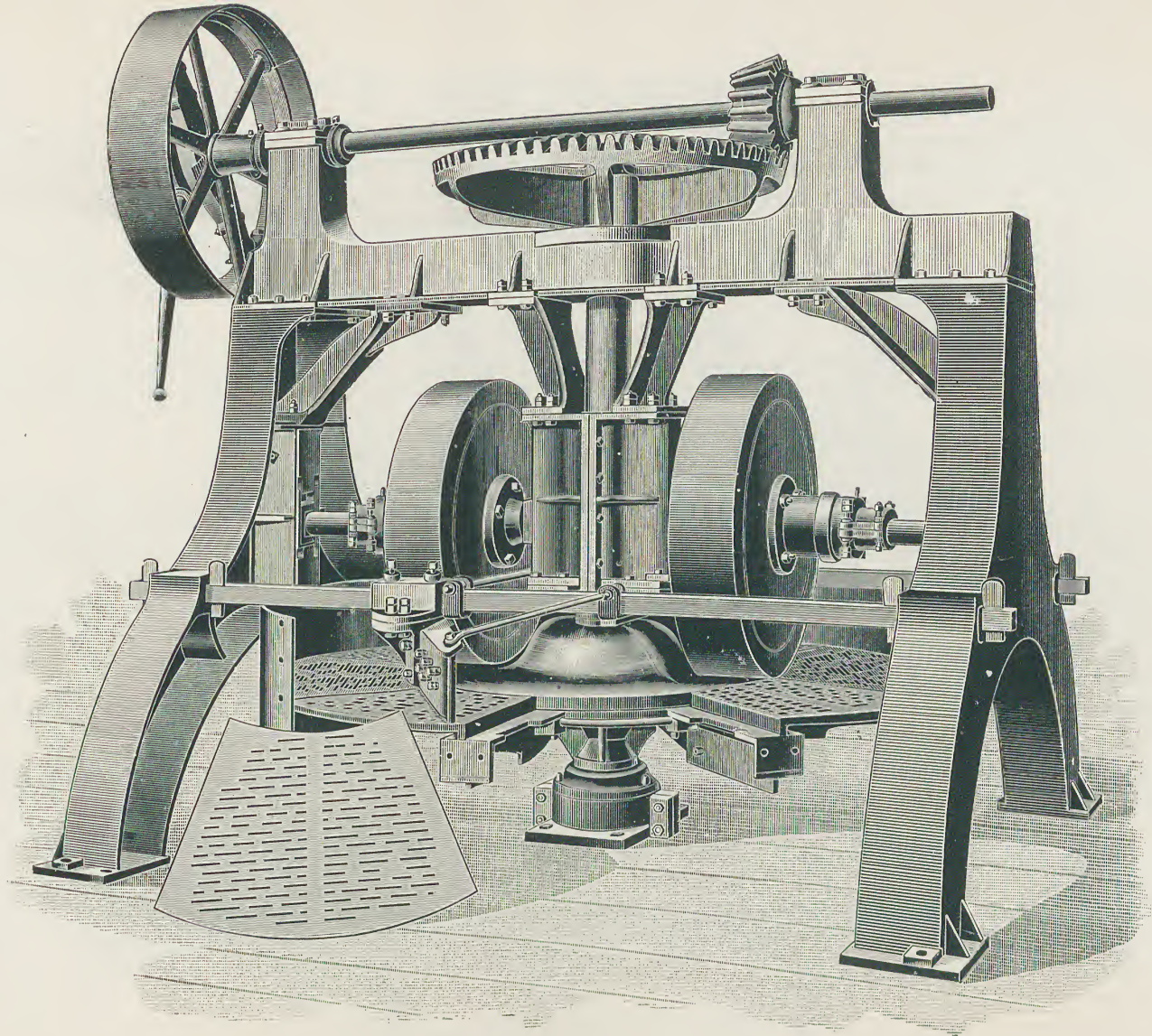
### DRY PANS

#### MODE OF OPERATION

By communicating power to the pinion shaft of the machine, the main shaft and pan are caused to revolve rapidly, and in turn communicate motion to the crushing rollers or wheels. These wheels revolve on the cross shafts holding them in position, but do not travel around the pan. As the material is thrown into the rapidly revolving pan, centrifugal motion tends to throw the material to the outside of the pan, where it encounters the scrapers or plows, which in turn throw it under the revolving rollers. This operation is repeated until the material is fine enough to sift through the screen plates at the outer part of the pan. Below the revolving pan should be arranged either a wooden platform or a secondary, stationary pan, to catch the material as it falls through the screens, and arranged with an opening communicating with the boot of an upright bucket elevator. To the arms which hold the screen plates in position are bolted wrought-iron scrapers or wings, which catch the material as it drops through the screens onto the platform or stationary pan and convey it to the discharge opening, where it drops into the boot of the bucket elevator. The bucket elevator catches the clay and conveys it to a screen, either stationary or revolving, which screens the clay and deposits it in a suitable bin ready for use.

The tailings, or portions of the material not fine enough to pass through the screen, are returned to the dry pan and reground.





Dry Pan. Style "F."



# DRY PAN, STYLE "F"

This machine is constructed for grinding fire clays, shale, quartz, cement, lime, sand, spar, ochre, calcine, grog, plaster, rock, plaster paris, bones, coal or any hard substance. For strength and solidity it has no equal.

This machine is made by us in three sizes, viz., 7, 8 and 9 foot diameter.

## CAPACITY

We claim that this Pan has from 10 to 20 per cent. greater screening capacity than any other Pan of same size; it is so balanced that a great speed can be obtained. It will readily be seen that additional centrifugal power is obtained to throw the material outward over the screening plates, and the screens are of such increased area that the reduction is increased in the same ratio.

## SHAFTS AND GEARING

The vertical shaft has a hole through the center from top to bottom, through which the oil passes to lubricate the bottom bearing, having an oil reservoir under and around it, revolving on two hard chill discs with distributing oil grooves, and between these two discs is placed our patent Phosphor-Bronze Plate, which saves friction, heating and wear.

The pulley shaft is made of steel. The bevel gearing is of extra heavy pattern.

## FRAMES AND MULLERS

The entire Pan is made of iron and steel. The frames are accurately fitted, each joint is planed square, every hole drilled and each bolt fitted with lock nuts.

The mullers are supported on independent shafts, the ends of which are provided with blocks that move in guides in the frames, also in guides in the shrouds encircling the main shaft. The mullers move always square on the face of the bed, whereas if both mullers are supported by one shaft, if one is lifted, the other follows to some extent, so that only the edges touch the bed.

One side of each vertical guide at the end of the mullers is removable, which allows the shaft and muller to be taken out without delay. The ends of the muller shafts are supported by heavy rubber springs, so that they are close to, but do not touch, the floor plates when the Pan is empty.

The space between the mullers and floor plates can be nicely adjusted to suit each material, by means of adjusting screws and rubber springs in the frames and shroud which encircles the vertical shaft.

The mullers have deep, hard chill tires, which can be readily removed from the centers when the substitution of new tires is necessary.

The floor plates and screen plates are both made of chill iron.

## SCRAPERS

The scrapers are hung on universal joints so that they can be adjusted in any direction; they are also provided with interchangeable chill face plates which render the wear of the scrapers four times as long as that of the ordinary scrapers.

## PULLEY, SPEED AND WEIGHT

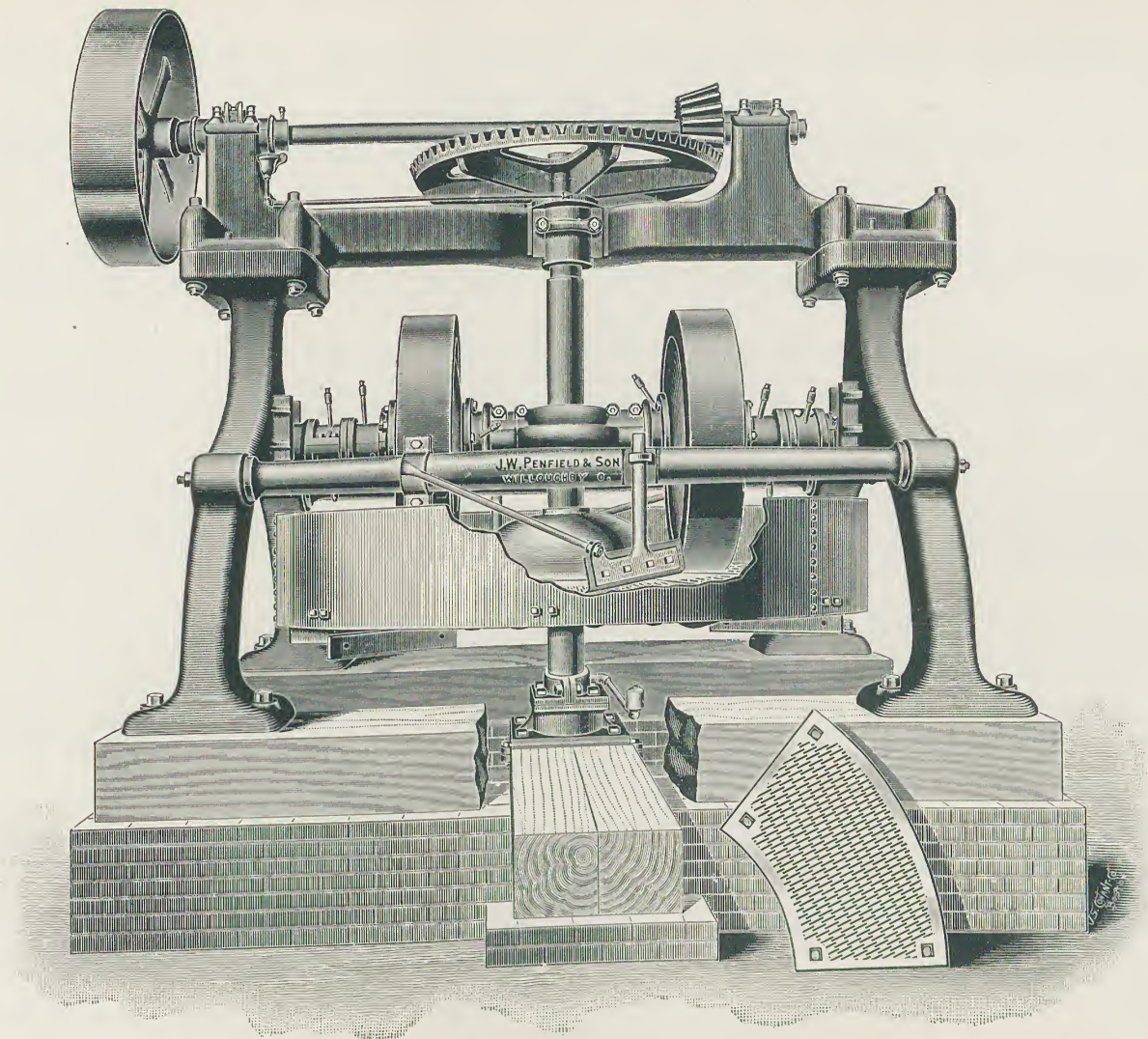
This machine is provided with our four-arm friction clutch driving pulley.

Speed, 150 revolutions per minute.

Approximate weight of seven-foot pan, 21,000 pounds; pulley, 42 inches diameter, 10-inch face.

Approximate weight of eight-foot pan, 26,000 pounds; pulley, 48 inches diameter, 12-inch face.

Approximate weight of nine-foot pan, 30,000 pounds; pulley, 48 inches diameter, 12-inch face.



9-Foot Iron Frame Dry Pan. Style "P."



# 9-FOOT IRON FRAME DRY PAN, STYLE "P"

## SHAFTING AND JOURNALS

The main shaft is solid, 7 inches in diameter. The horizontal roller shafts are  $4\frac{3}{8}$  inch forged steel. Pinion shaft  $3\frac{1}{8}$  inches in diameter. The bearings of the cross-roller shafts, and the oil bearings of the grinding rollers, are provided with oil pipes at different parts of their circumference so that one or more of the pipes are always accessible for oiling.

## GEARING, PULLEYS AND SPEED

The pan is back geared four to one, the gearing being extra heavy. The driving pulley is 48 inches in diameter, 12-inch face. The speed required varies according to the nature of material to be pulverized and the capacity desired. Ordinarily the driving pulley should make about 125 revolutions per minute.

## FRAME

The side frames are very heavy and bound together at the top by the heavy top bridge-tree, and at the center by two cross-ties. The feet of the frames have large bearing surfaces, and are securely bolted to the sills. The surfaces of the top bridge-tree resting on the side frames are each 24 inches by 36 inches and the cross-ties have bearing surfaces 12 inches in diameter at each end; thus the side frames are bound securely together, ensuring rigidity of the machine.

## ROLLERS

The grinding-rollers are 48 inches in diameter, 10-inch face. These rollers are constructed in three sections, namely: The outer chilled grinding rim, the oil bearing on the shaft, and the intermediate web. The oil bearing is a babbitted sleeve, arranged with oil chambers around the entire shaft. It has large oil capacity, and, being protected from dust, makes a very desirable bearing. Either the oil bearing or the grinding rim can be removed and replaced without renewing the balance of the roller. The grinding rollers complete weigh about 5,000 lbs. each.

## REVOLVING PAN

The rim of the pan is heavy boiler plate. The screen plates have extra large screen surface, ensuring increased capacity. The screen plate openings are ordinarily about  $\frac{3}{16}$  of an inch wide, but can be made of any desired fineness.

## SCRAPERS

The scrapers are securely attached to the cross-ties, and supported by heavy rods clamped also to the cross-ties. The scrapers can be adjusted up or down, and at any desired angle, in order to throw the clay under the crushing rollers at whatever speed the pan may be running.

## SHOE OR BOTTOM BEARING

The bottom of the main shaft rests upon an upper thrust plate, interlocked with the shaft and revolving with it. The lower thrust plate is stationary. These hard metal thrust plates are polished and grooved so as to distribute the oil over the entire surface of both plates. The two bottom castings of the shoe are so arranged that by removing the bolts and these castings, the thrust plates can be taken out and replaced without lifting the entire machine from its foundation.

**Weight:** The machine complete weighs 32,000 lbs.

**Power Required:** The power required depends upon the speed of operation, and the nature of the work required. 30 to 40 horse-power would be a safe estimate under most circumstances, and in some instances where the material is not as hard to crush, or the machine is not speeded as high, less power will do the work.

**Capacity:** This also varies according to the nature of the material to be prepared and its condition as it enters the pan.



## 7-FOOT IRON FRAME DRY PAN, STYLE "P"

The general design and manner of construction is the same as the 9-Foot Pan, but it is smaller and of less capacity. The main shaft is solid and is  $6\frac{1}{2}$  inches in diameter at the pan. The horizontal roller shafts are forged steel,  $3\frac{7}{8}$  inches in diameter; the gearing is extra heavy; the driving pulley is 48 x 12 inches and should make about 125 revolutions per minute.

### ROLLERS.

The rollers are 42 inches in diameter, 8-inch face, the manner of construction being the same as in the 9-Foot Pan.

### REVOLVING PAN.

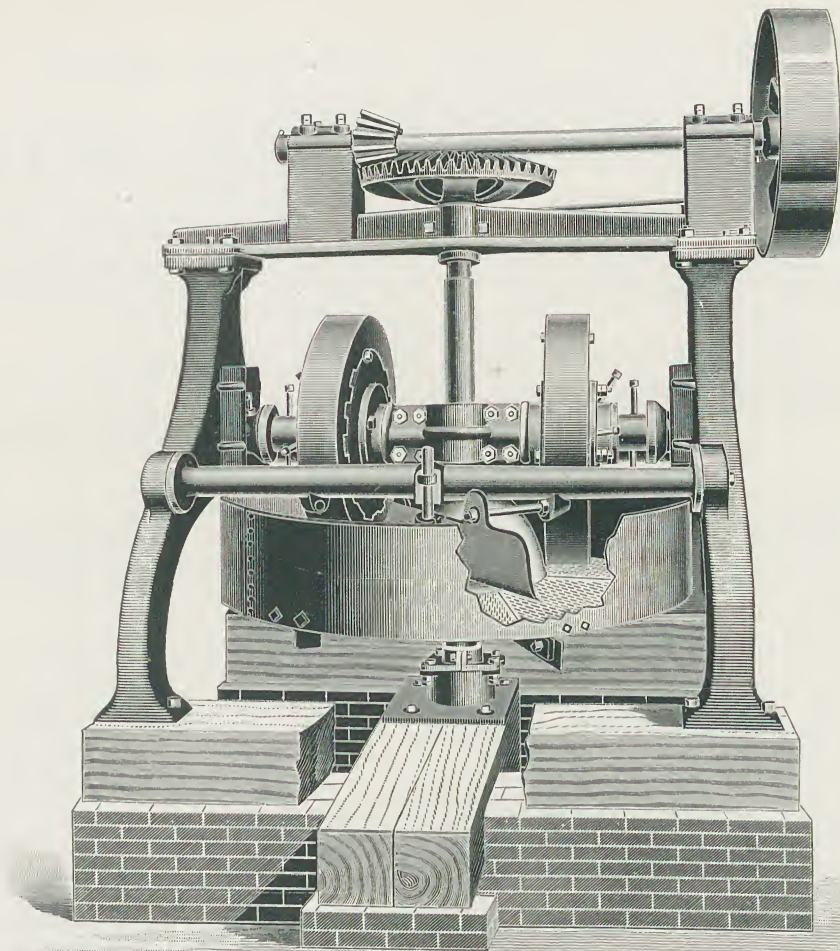
The rim of the pan is heavy boiler plate. The revolving pan throughout is constructed in the same manner as the 9-Foot Pan, but is only 7 feet in diameter.

### SHOE OR BOTTOM BEARING.

The same style of bottom bearing is used as in the 9-Foot Pan, and the thrust plates can be removed and replaced without lifting the machine from its foundation.

### WEIGHT AND POWER REQUIRED.

The machine will weigh 24,000 lbs., and from 15 to 20 horse-power will be sufficient ordinarily to operate it successfully. It is designed for use chiefly where burned bricks or pipe, grog or refuse clay are to be ground, and is excellently adapted in every way for this purpose. The machine is constructed in a strong, substantial manner throughout, and will be found thoroughly efficient and reliable.



6-Foot Iron Frame Dry Pan. Style "P."

## 6-FOOT IRON FRAME DRY PAN, STYLE "P"

This machine is constructed upon the same general principle as the 7 and 9-Foot Pans, Style "P," but is smaller and of less capacity.

### ROLLERS AND PAN

The rollers are 36 inches in diameter, 6-inch face, and provided with renewable rims. The rim of the pan is of heavy boiler plate, and the revolving pan throughout is constructed in the same general manner as in the larger machines.

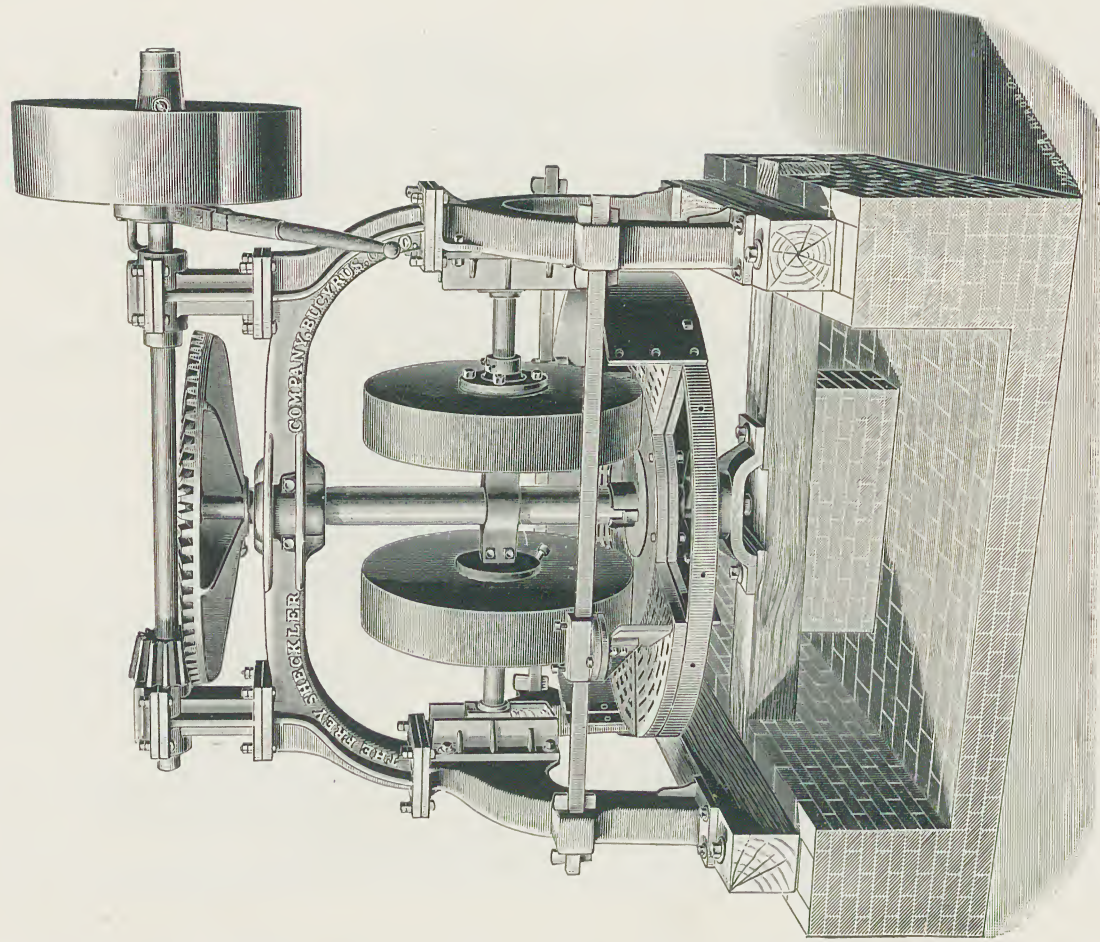
### BOTTOM BEARING

The same style of bottom bearing is used as in the larger pans, and the thrust plates can be removed and replaced without removing the machine from its foundation.

### SHAFTING, PULLEYS AND SPEED

The main shaft is solid and is 5 inches in diameter. The horizontal roller shafts are forged steel,  $3\frac{3}{8}$  inches in diameter; the gearing is extra heavy; the driving pulley is 36 inches in diameter, and 8-inch face, and should make about 125 revolutions per minute. From 10 to 15 horse-power is ordinarily sufficient to operate it successfully. It is designed for use in works where only small grinding capacity is desired. Weight, 11,000 pounds.





5-Foot Dry Pan. Style "F."

## 5-FOOT IRON FRAME DRY PAN, STYLE "F"

This pan is constructed almost upon the same general principle as our larger pans, Style "F," and embodies many new and useful features.

### CONSTRUCTION AND MATERIAL.

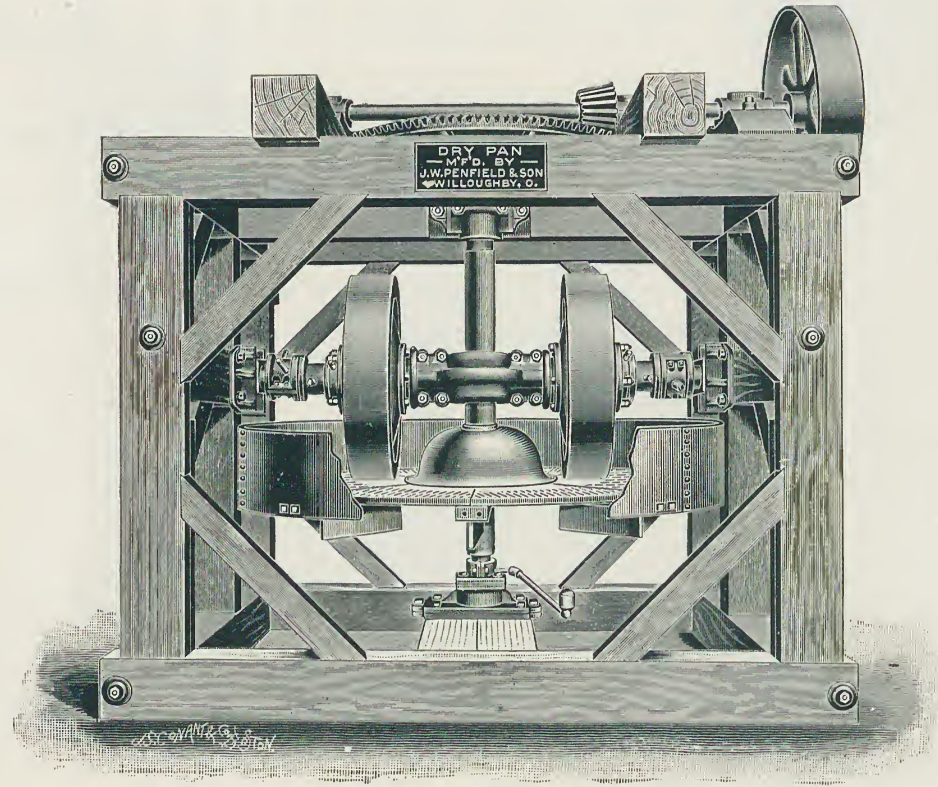
The entire pan is made of iron and steel. The mullers are 36 inches diameter, 7 inch face. The step for upright shaft is brass bushed, and supplied with thrust plates. The step is made adjustable so as to keep the gearing in proper mesh at all times, by raising or lowering the vertical shaft as the case may be. The vertical shaft is  $5\frac{1}{2}$  inches diameter.

### PULLEY, SPEED AND WEIGHT.

This machine is supplied with a four-arm friction clutch pulley 36 inches diameter, 7 inches face, and should make 150 revolutions per minute. Weight, 10,000 pounds.

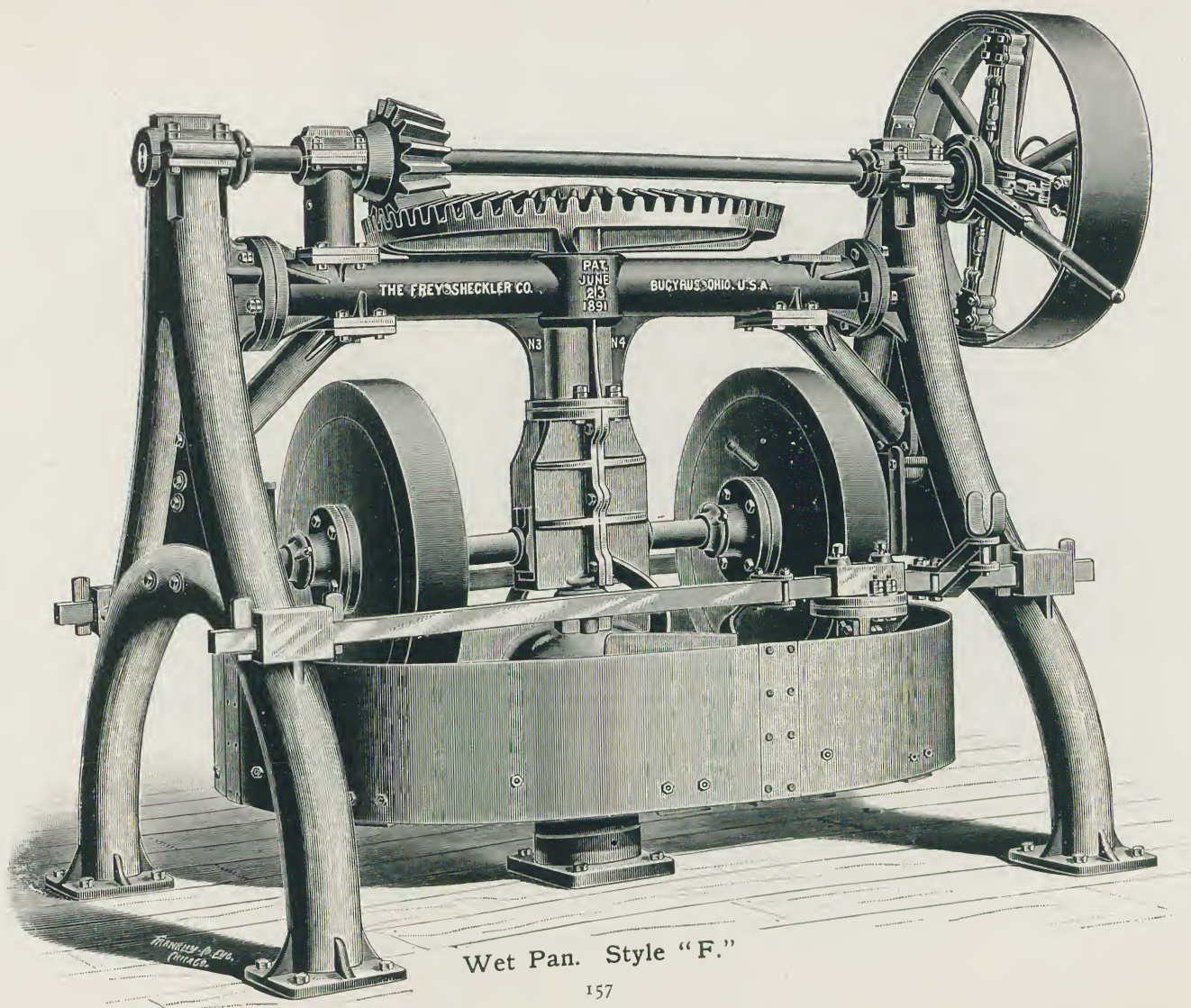
## 10-FOOT DRY PAN

We also manufacture a 10-Foot diameter Dry Pan, the general construction of which is similar to that of our 9-Foot Pan, Style "F." Those interested in this sized pan will find it to their interest to write to us for information.



Wood Frame Dry Pan. Style "P."





Wet Pan. Style "F."

# WET PAN, STYLE "F"

This machine is designed for the tempering of clay direct from the clay bank, or from the Dry-Pan or Crusher.

It is a useful substitution for the Pug-Mill where the clay is of a silicious nature. The action of the heavy mullers manipulates and reduces clays of a gritty sandy nature to a more combined or plastic body.

We build this machine in three sizes, to wit, 7, 8 and 9 foot diameter; they are built similar to the Dry-Pans of same diameters, and embody all of the features which our Dry-Pan possesses.

## MAIN SHAFT AND GEARING

The vertical shaft has a hole through the center from top to bottom, through which the oil passes to lubricate the bottom bearing, having an oil reservoir above and around it, revolving on two hard chill discs with distributing oil grooves, and between these two discs is placed our patent Phosphor-Bronze Plate, which reduces friction, heating and wear.

## FRAMES AND MULLERS

The entire Pan is made of iron and steel. The frames are accurately fitted, each joint is planed square, every hole drilled and each bolt fitted with lock nuts.

The mullers are supported on independent shafts, the ends of which are provided with blocks that move in guides in the frames, also in guides in the shroud encircling the main shaft. The mullers move always square on the face of the bed, whereas if both mullers are supported by one shaft, if one is lifted, the other follows to some extent, so that only the edges touch the bed.

One side of each vertical guide at the end of the mullers is removable, which allows the shaft and muller to be taken out without delay. The ends of the muller shafts are supported by heavy rubber springs, so that they are close to, but do not touch, the floor plates when the Pan is empty.

The space between the mullers and floor plates can be nicely adjusted to suit each material, by means of adjusting screws and rubber springs, in the frames and shroud which encircles the vertical shaft.

The mullers have deep, hard chill tires, which can be readily removed from the centers when the substitution of new tires is necessary.

The scrapers are hung on universal joints so that they can be adjusted in any direction; they are also provided with interchangeable chill face plates, which render the wear of the scrapers four times as long as that of the ordinary scrapers.

## PULLEY, SPEED AND WEIGHT

This machine is provided with our four-arm friction clutch driving pulley.

Speed, 150 revolutions per minute.

Approximate weight of seven-foot Pan, 21,000 pounds; pulley 42 inches diameter, 10-inch face.

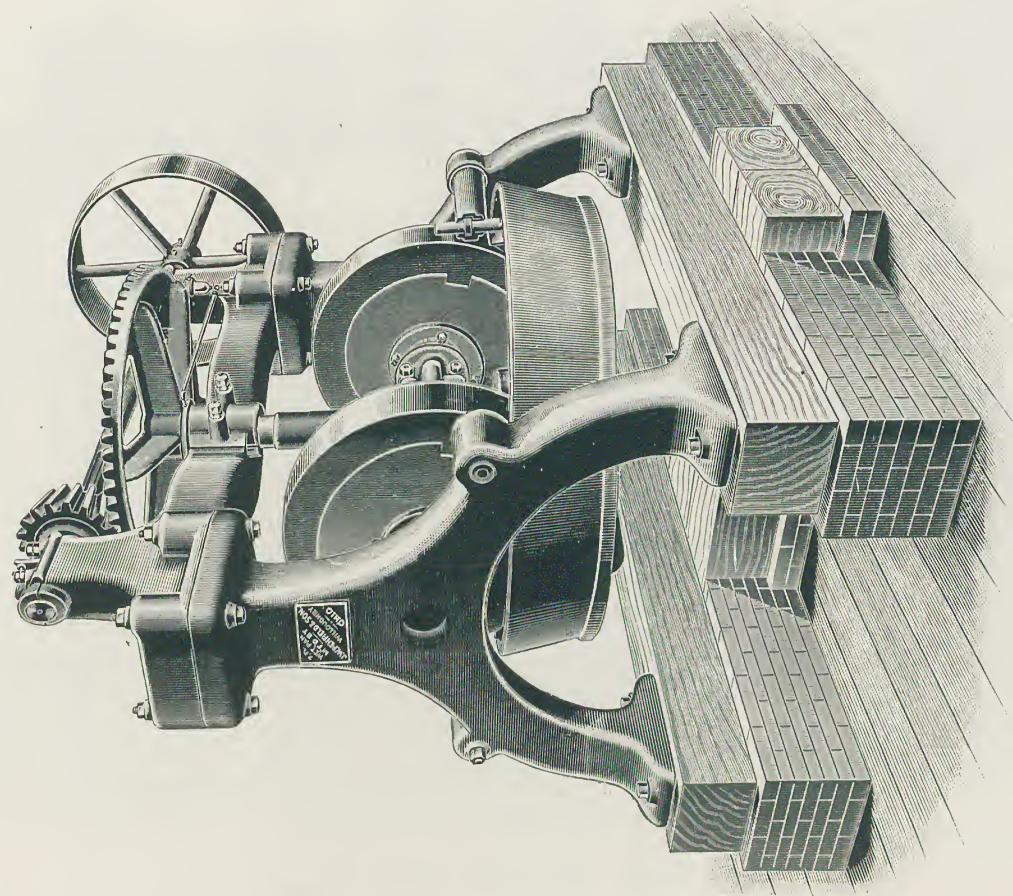
Approximate weight of eight-foot Pan, 26,000 pounds; pulley 48 inches diameter, 12-inch face.

Approximate weight of nine-foot Pan, 30,000 pounds; pulley 48 inches diameter, 12-inch face.

We also manufacture a ten-foot diameter wet-pan, the general construction of which is similar to that of our nine-foot wet-pan. This pan embodies many useful features.

This machine is supplied with a friction clutch driving pulley, 48-inch diameter, 12-inch face, and should make 150 revolutions per minute.





7-Foot Iron Frame Wet Pan. Style "P."



## 7 AND 8 FOOT IRON FRAME WET PANS, STYLE "P"

### GENERAL CONSTRUCTION

This machine is constructed in substantially the same manner as the iron frame dry pans previously described, but differs in the style of pan. The framework, gearing, and pulleys are the same as in the dry pans of corresponding size.

### SCRAPERS

The scrapers can be adjusted up and down, and at any desired angle.

### SHOE OR BOTTOM BEARING

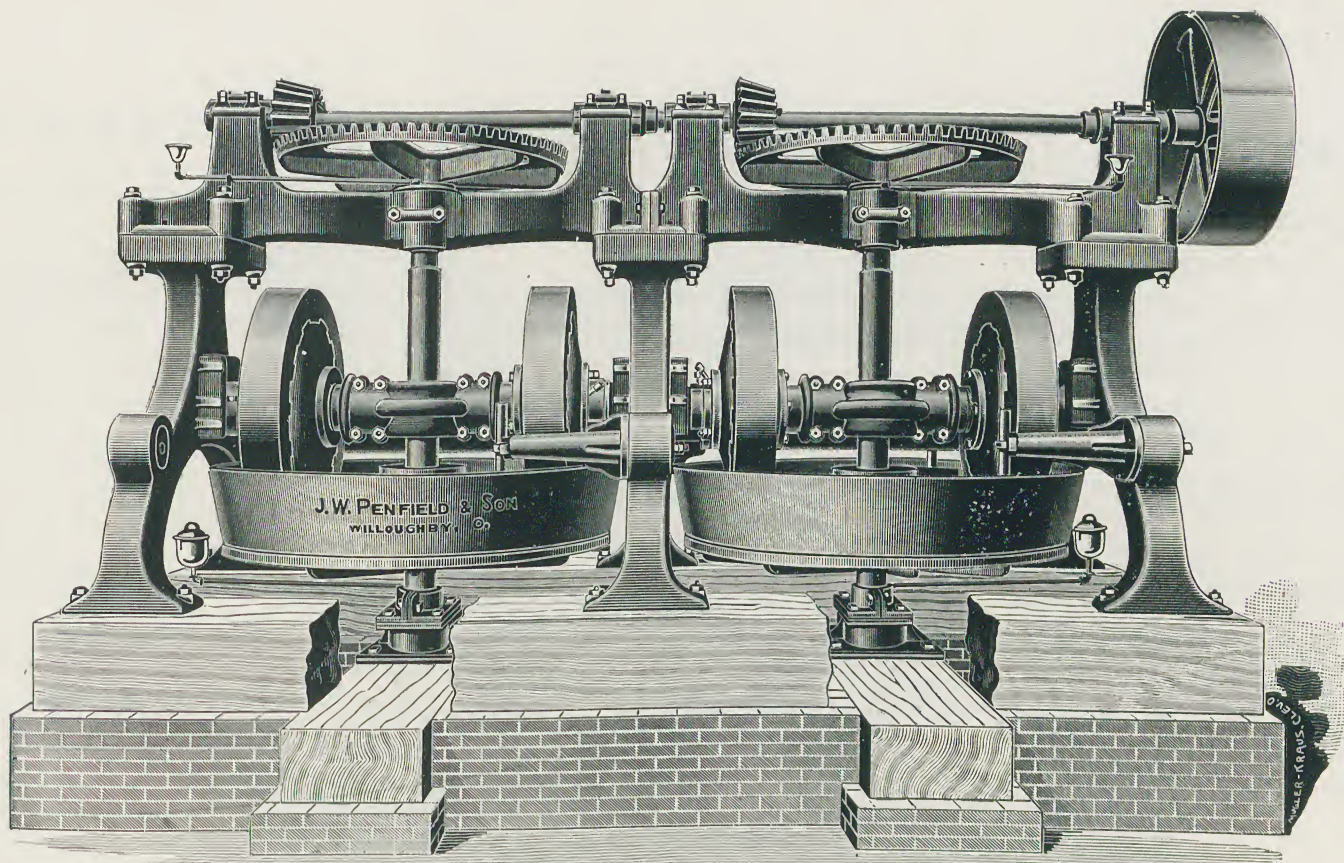
The same style of shoe is used as in the dry pan. The chilled thrust plates are polished and provided with oil channels, and can be replaced without lifting the machine from its foundation.

### WEIGHT AND POWER REQUIRED

The machine complete weighs about 28,000 pounds. Under ordinary circumstances 20 to 30 horse-power is a safe estimate, and will run the machine very nicely.

### CAPACITY

This varies according to the nature of the material to be prepared, and its condition as it enters the pan.



Double 7-Foot Wet Pan. Style "P."

## DOUBLE AND TRIPLE WET AND DRY PANS, STYLE "P"

Where desired, we can furnish wet or dry pans arranged in the double or twin form, as shown in the preceding cut, or in triplet or quadruplet form if three or four pans are used.

Where more than one pan is required, this is an excellent arrangement, ensuring saving of space and greater rigidity.

The pans can all be driven by one pulley, but are ordinarily arranged with independent pulleys and belts for each pan.

## WOOD FRAME WET PANS, STYLE "P"

The method of operation is the same as of the iron frame wet pans.

### FRAME

The side and top frames holding the iron work are composed of heavy oak timbers. The timbers are mortised as shown in the cut, and are also securely pinned and bolted together, making the pan firm and rigid.

### OTHER DETAILS

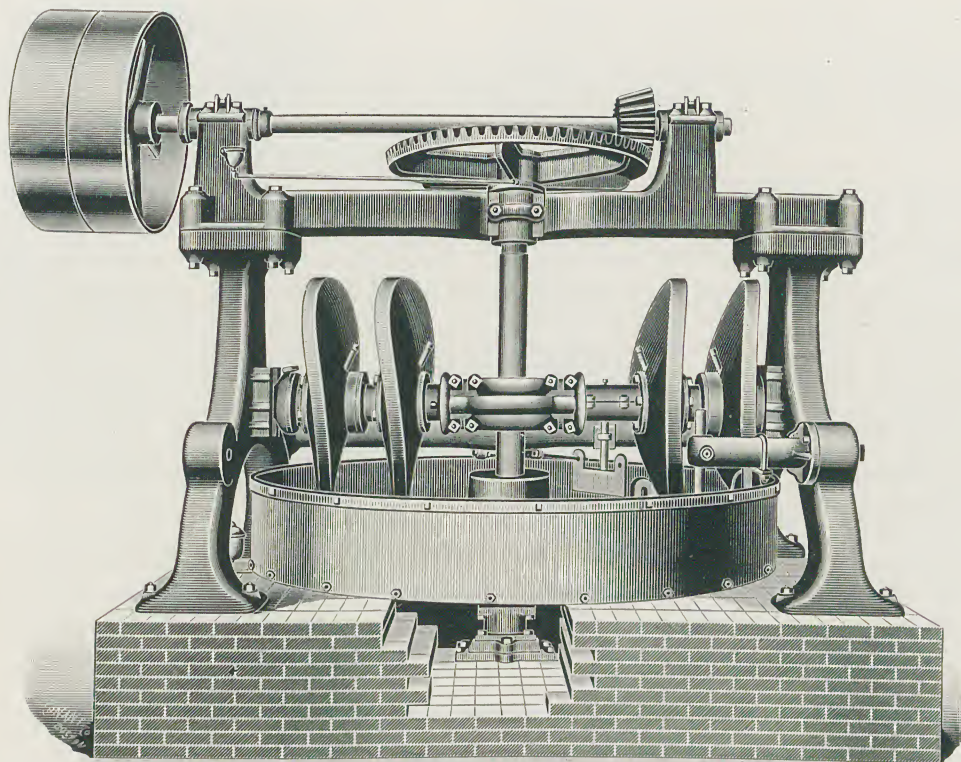
The iron work for the pan, consisting of the shafting, gearing, journals, rollers, revolving pan, and bottom bearing for main shaft are exactly the same as in the iron frame pan, and the power required and capacity is, of course, equal.

### IRON WORK ONLY

If desired, we can furnish the iron work, alone, of the pan, the purchaser providing the necessary framework.

Prices of any of our pans will be furnished upon application.





Special Clay Grinding Mill.

*PATENTED.*

## 9-FOOT SPECIAL CLAY GRINDING MILL

PATENTED

The preceding cut represents our Special Clay Grinding Mill for grinding and tempering clay in a moist condition, being adapted for handling the same class of material as the ordinary wet pan. It is especially well suited for use in sewer-pipe factories and similar establishments. With the exception of the peculiar construction of the rollers, the machine is of the same general design and construction as our iron-frame wet pans, Style "P".

### THE MULLERS

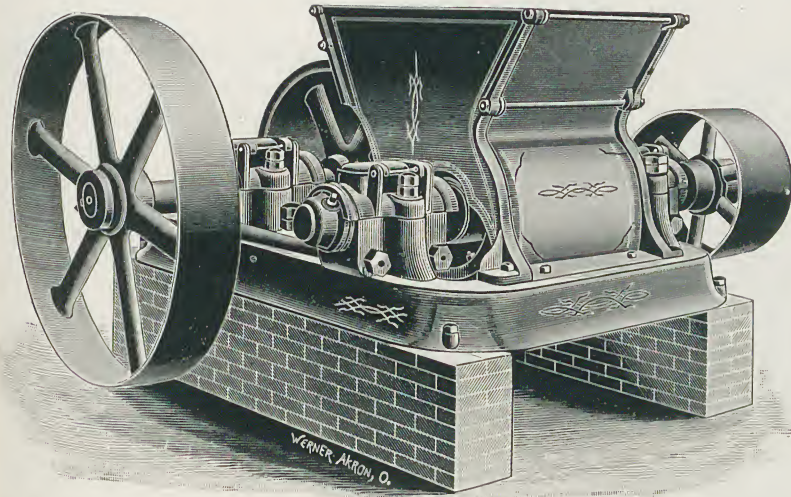
The mullers are of narrow face, and are of fluted shape, having a serpentine tread. The narrow face of the rollers ensures much better and faster work in thoroughly cutting, reducing and tempering the clay; at the same time, owing to their serpentine tread, they cover in their revolutions, the same width of track in the pan bottom as the ordinary wide-faced wet-pan roller. The machine is provided with two pairs of rollers, one pair being set at the outer circumference of the pan, and the other pair being set in near the main shaft. The rollers in their revolution cover the entire surface of the pan, and the speed at which the material can be prepared is thus greatly increased.

### POWER REQUIRED. CAPACITY

Under ordinary circumstances, from 30 to 40 horse-power will be ample, and in some cases less power will do. Weight of machine, 44,000 pounds.

# CLAY DISINTEGRATORS

PATENTED



These machines are suited for handling either wet or dry clay, thoroughly reducing it and putting it in the best possible condition for further tempering in the pug-mill if required. Our method of construction dispenses with the imperfections and complications of other similar machinery, and makes our Disintegrators the simplest and most effective ones upon the market.

## MODE OF OPERATION

The large or feed roller has a slow motion, while the small, disintegrating roller, provided with steel cutters, is driven at a high rate of speed. The effect of this combination is to remove successive portions of the clay, at the same time thoroughly breaking up and destroying the original grain and fibre of the material. The clay after being disintegrated is usually elevated or fed into a pug-mill, or, if already of the right consistency, into the brick machine direct.

## GENERAL CONSTRUCTION

The machines are of neat design, compact and self-contained. The base is a heavy casting containing the roller shafts, which are long and conveniently arranged for oiling. The shafting is heavy, and extended out to receive the driving pulleys, each roller being driven by an independent pulley. Thus no gearing, sprocket wheels and chain, frictions or short roller-connecting belts are required to drive the feed roller, but each roller has an independent, positive motion.

## FEED ROLLER

This roller is chilled, ground off perfectly true, and balanced. It is run at slow speed, its function being chiefly to assist in feeding the clay through, and to gauge the fineness of the disintegrated material. The bearings of this roller are adjustable, so that the distance between the two rollers can be readily regulated as desired.

## DISINTEGRATING ROLLER

This roller is provided at its circumference with a number of equi-distant projecting steel cutters. This part of the roller when worn out can be cheaply replaced. The disintegrating roller is run at a high rate of speed, and quickly tears apart the fibre of the clay, thoroughly reducing it.

## THREE SIZES

We manufacture three sizes of Disintegrators, designated, respectively, as the 14, 18 and 24-inch machines. We give herewith details as to capacity, dimensions, etc., and will furnish cheerfully further particulars as to any size.



## 24-INCH DISINTEGRATOR

PATENTED

This is the largest size we make, and is capable of handling clay for 25,000 to 50,000 brick per day.

The slow speed roller is 30 inches in diameter, 24 inches long, with a 36 by 10-inch pulley which should make 30 revolutions per minute. The high speed roller is 18 inches in diameter, 24 inches long, has steel cutters, and is provided with a 20-inch by 10-inch pulley which should run 600 revolutions per minute. The machine is arranged with suitable scraper for the feed roller.

Extreme height.....	3' 3".	Length of sills.....	6' 3".
Width of base.....	4' 4".	Extreme width of machine.....	7' 8".
Weight, 4,100 pounds.			

## 18-INCH DISINTEGRATOR

PATENTED

This machine is adapted for works having a capacity of 25,000 to 40,000 bricks per ten hours.

The feed roller is 28 inches in diameter, 18 inches long, with a 36 by 6-inch pulley which should run 40 to 50 revolutions per minute. The disintegrating roller is 14 inches in diameter, 18 inches long, provided with steel cutters, and with an 18 by 10-inch pulley which should run 400 to 600 revolutions per minute. The machine is arranged with suitable scraper for the feed roller.

Height above sills.....	2' 6".	Length of base.....	5'.
Width of base.....	3' 6".	Extreme width.....	6' 4".
Weight, 3,150 pounds.			

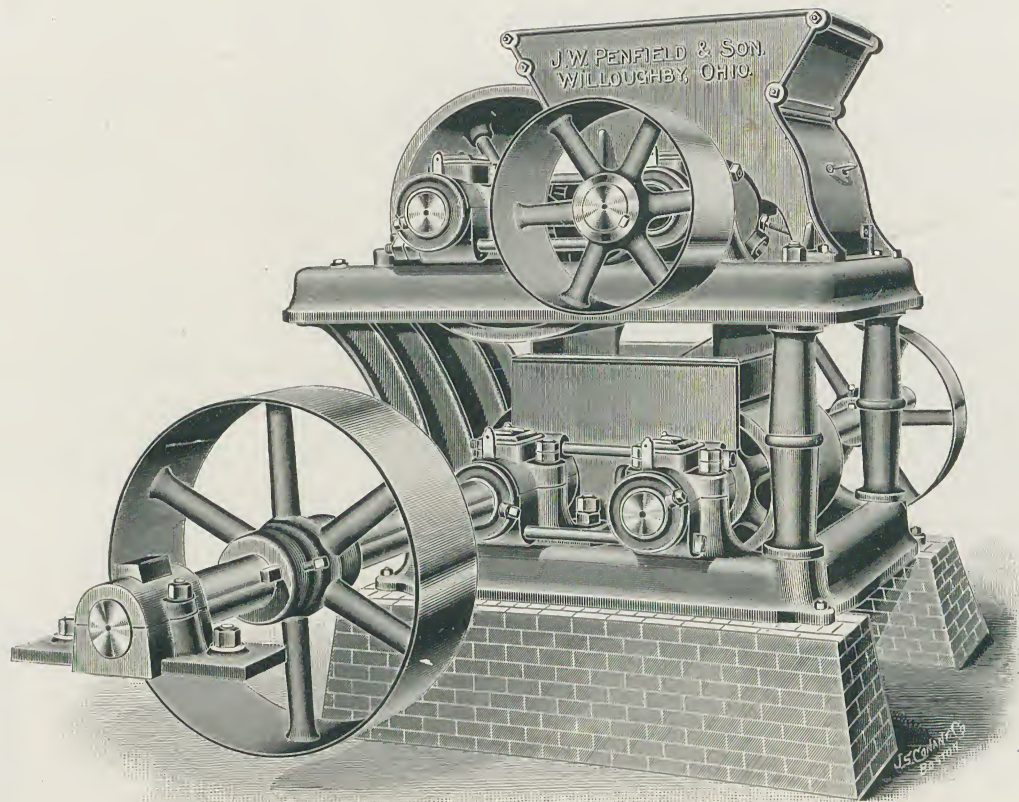
## 14-INCH DISINTEGRATOR

PATENTED

This machine is self-contained and mounted on an iron base. It will handle clay for from 15,000 to 20,000 brick per ten hours.

The feed roller is 24 inches in diameter, 14 inches long, and provided with a 30-inch by 4-inch pulley which should run about 30 revolutions per minute. The high-speed roller is 12 inches in diameter, 14 inches long, provided with steel cutters, and arranged with a 16 by 8-inch pulley which should make from 450 to 600 revolutions per minute. The feed roller is provided with an adjustable scraper.

Height of machine above sills.....	2' 6".	Length of sills.....	5' 6".
Width of base.....	2' 11".	Extreme width.....	5' 2".
Weight, 1,900 pounds.			



24-Inch Combined Disintegrator and Crusher.

PATENTED.

# COMBINED DISINTEGRATOR AND CRUSHER

PATENTED

This machine embodies advantages of both disintegrators and roller crushers, and will be found especially valuable in clays having lime stone in them, or which require more than the average amount of preparation.

The upper part of the machine is substantially the same as the 24-inch Disintegrator, the construction and dimensions of rollers, pulleys, etc., and the speeds of operation being the same as previously specified in the description of that machine.

The lower half of the machine consists of crushing rollers mounted upon a suitable frame, the pulley shafts being extended out long enough to receive the driving pulleys. Each roller has an independent, positive motion, and they can be run at equal or unequal speeds as may be desired. The rollers are 18 inches in diameter, 24 inches long, are chilled and ground true, hence can be set very close together, ensuring the thorough reduction of the clay.

The machine is constructed in a strong, substantial manner throughout, and will handle clay for from 30,000 to 50,000 bricks per day. Estimated weight of machine, 110,00 pounds.



# ROLLER CRUSHERS, STYLE "P"

For the preparation of many kinds of clay, there is no machinery made that will accomplish as much, with as little power and expense, as a first-class roller crusher. Our line of roller crushers is very complete, embodying many valuable features not found in machinery of other makes.

## SOME SPECIAL FEATURES OF OUR ROLLER CRUSHER

### CHILLED ROLLERS

All our crusher rollers are cast in iron chills, giving them a hard, impenetrable, wear-resisting surface. The best of material for this purpose is used, ensuring perfect and even chilling of the rollers, adding largely to their durability.

### GROUND ROLLERS

We have erected in our works special machinery, by means of which we can automatically grind the rollers for our smooth roll crushers perfectly true. The rollers are ground while revolving on their own bearings, and any variations or imperfections they may have as they come from the chills are thus positively corrected. The rollers can consequently be set very close together in the crusher, ensuring fineness of reduction, which is very desirable in many kinds of clay.

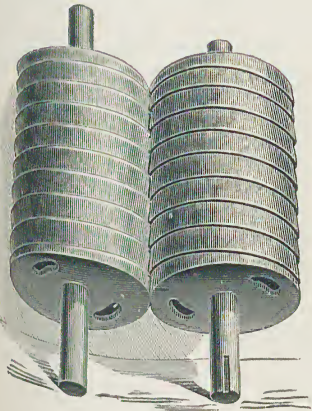
The smooth rollers in our compound crushers, and in the No. 10 S and No. 6 smooth roll crushers, all in Style "P," are regularly ground without additional charge. Ground rollers can be furnished for our smaller smooth roll crushers at an additional charge, which will be named upon application.

### CORRUGATED ROLLERS

The accompanying cut shows the form of corrugations used in all our corrugated rollers except the No. 2 and No. 7 crushers. The rollers are made with broad, spiral corrugations or threads, right and left hand, respectively, extending the entire length of the rollers. The corrugations are a decided aid in taking through the clay rapidly, and at the same time the stones too large to be at once crushed are quickly conveyed by the spiral corrugations to one end of the roller, and pass out through an automatic spring gate.

This is the simplest and most satisfactory method of separating the stones from the clay, avoiding unnecessary parts and complicated contrivances such as are used in other so-called stone separating crushers upon the market.

As the projections on one roller fit into the corresponding depressions on the other roller, the wear is compensating, and the rollers can be set close together at all times.



## CORRUGATED CONICAL CRUSHERS

We are the only manufacturers producing crushers with conical corrugated rollers, this style of crusher being completely covered by our patents. This form of crusher is especially suitable for crushing stony clays of a tough, sticky nature. The corrugations would in any case remove the stones and assist in feeding the clay through. This work is facilitated by the fact that at the large end of the rollers the speed of surface motion is much more rapid than at the small end, the speed decreasing proportionately with the diameter of the rollers. The smaller pieces of clay are readily taken through at the small end of the rollers, and the corrugations convey the large lumps rapidly to the large end of the rollers, until they reach the point where the accelerated speed of surface motion, combined with the increased gripping surface, will force the clay through. Conical corrugated rollers are infinitely superior to conical smooth rollers, as the corrugations convey the large lumps more rapidly to the large end of the roller where the surface motion is sufficiently high to take them through readily.

## DIFFERENTIAL MOTION CRUSHERS

### CORRUGATED AND SMOOTH ROLL

In this style of crusher the rollers run at different speeds, usually one running two or three times as fast as the other; thus the clay is not only crushed, but is also subjected to a grinding motion similar to that used in a roller mill. This principle is especially valuable in clays containing limestone, as the particles are more thoroughly reduced and scattered more evenly through the clay, thus largely diminishing the injurious effects of the lime.

Our patented method of securing this result on corrugated crushers is as follows: The high speed roll is arranged with a single thread or corrugation running at a given pitch. The slow roller has a double thread or corrugation, with pitch twice as great as on the high speed roll, hence the corrugations on the high speed roll will advance the same in two turns as on the slow speed in one. At the same time, the corrugations match perfectly, and the decided advantage of differential motion is at the same time secured.

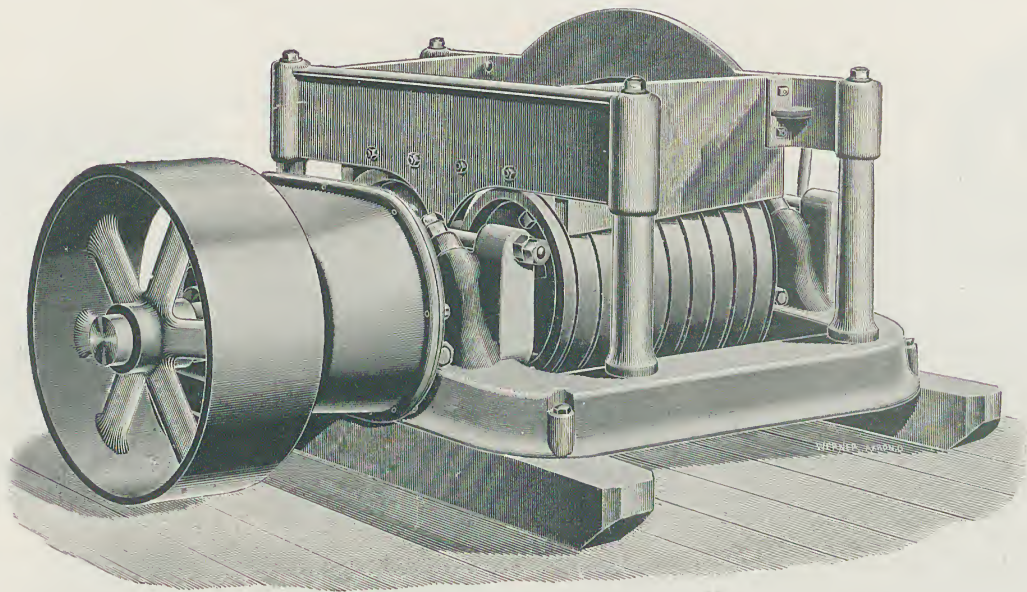
## THE AUTOMATIC RELIEF FEEDER

The Patent Automatic Relief Feeder is a feature distinctive of our style "P" Crushers. This style of feeder has proven to be the most successful device of the kind ever used. It is supported at each end by an arm extending back to the pinion shaft, and having suitable bearings on both picker and pinion shafts. As the picker is driven from the pinion shaft, it is evident that the picker shaft, arms and gears can be raised to any position. In case stones or other foreign material get under the picker, it simply rises up, relieving itself, and avoiding breakage, while its weight is at the same time assisting in feeding the clay through the rolls.



# THE No.8 CONICAL CORRUGATED CRUSHER, STYLE "P"

PATENTED



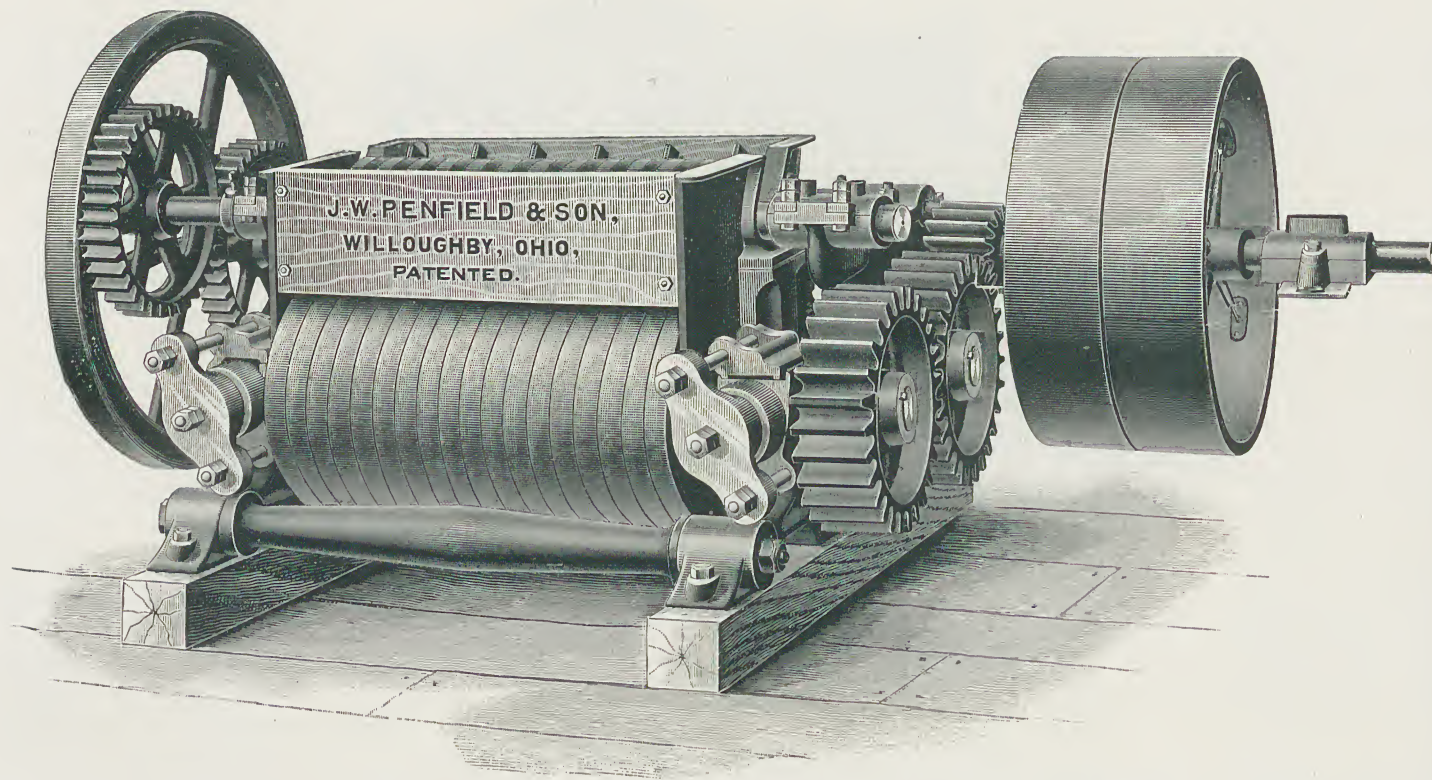
This Crusher is of heavy design and embodies the advantages of both corrugated and conical rollers. It is specially adapted for work in clays where there are a great many large stones, or where clay comes to the crusher in large lumps.

The rollers are thoroughly chilled and are provided with renewable outer shells, so that, when worn, each roller can be made as good as new by simply replacing the outer shell. Heavy car springs are located behind the boxes of the adjustable roller, acting as cushions to relieve the Crusher from unusual strain in case of iron or other foreign substances getting into it. The Crusher is single geared and has no feeder.

## PULLEYS, SPEED AND CAPACITY

The rollers are 27 inches long, 24 inches in diameter at the large end and 18 inches in diameter at the small end. The pulleys are 32 inches in diameter, 10-inch face, tight and loose, and should make 300 revolutions per minute. The Crusher will handle clay for from 40,000 to 80,000 brick per day. Estimated weight, 5,000 pounds.





No. 4 Corrugated Clay Crusher and Stone Separator. Style "P."  
PATENTED.

## No. 4 CORRUGATED CRUSHER, STYLE "P"

PATENTED

The accompanying cut represents our No. 4 Corrugated Crusher, which is constructed in a strong, substantial manner throughout, and provided with our Patent Automatic Relief Feeder.

### ROLLERS

The rollers are provided with our patent spiral corrugations, and are 17 inches in diameter by 36 inches long, and thoroughly chilled. The roller farthest from the pulley shaft is adjustable so that the distance between the rollers can be regulated at all times. Heavy car springs are used as cushions behind the adjustable roller, thus precluding the danger of breakage should pieces of iron or foreign substances get into the crusher.

### PULLEYS, SPEED AND CAPACITY

The pulleys are 32 inches in diameter, 10-inch face, tight and loose, and should run 150 to 200 revolutions per minute. The crusher will handle material for from 30,000 to 50,000 brick per ten hours.

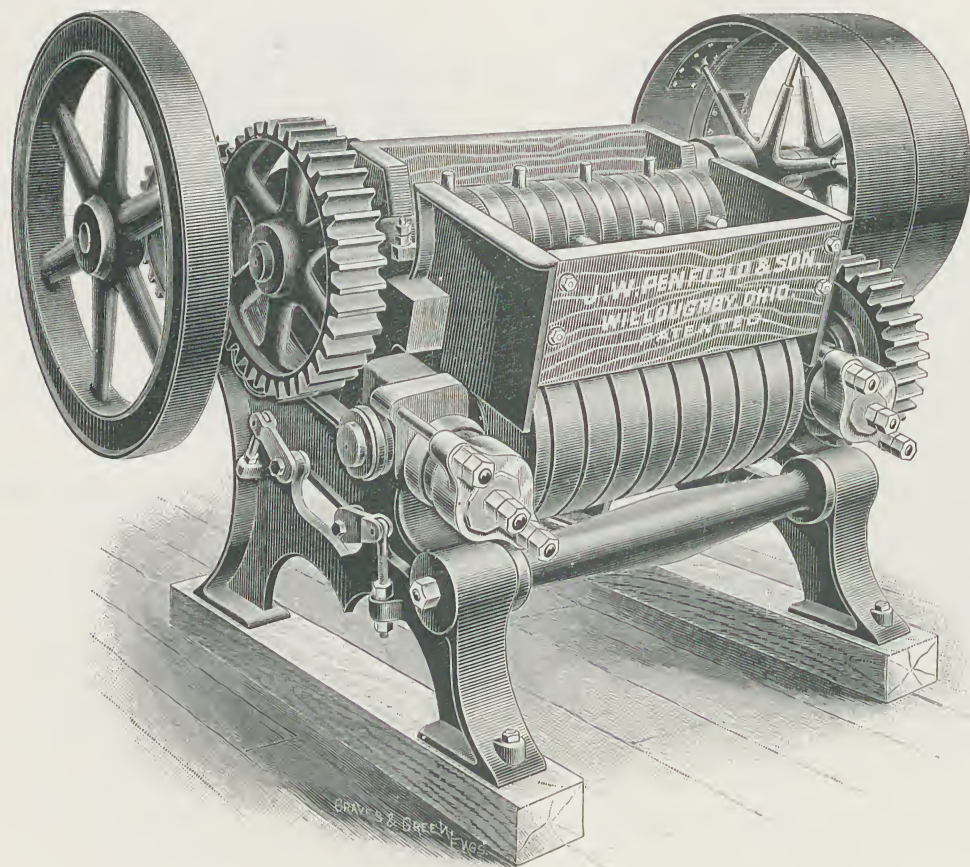
Extreme height .....	4'.
Floor space for sills .....	5' x 4' 3".
Floor space over all .....	5' x 8'.

Approximate weight, 6,500 pounds.



# No. 3 CORRUGATED CRUSHER, STYLE "P"

PATENTED



Our No. 3 Corrugated Crusher is shown in the accompanying illustration. It is built with a surplus of strength throughout, and provided with the Patent Automatic Relief Feeder.

## ROLLERS

The rollers are provided with our patent Spiral Corrugations, and are 15 inches in diameter and 26 inches long. The roller farthest from the pulley shaft is adjustable, and arranged with suitable car springs behind the boxes. The rollers are thoroughly chilled.

## PULLEYS, SPEED AND CAPACITY

The pulleys are 32 inches in diameter, 8-inch face, and should make 150 to 200 revolutions per minute. The Crusher will handle clay for from 20,000 to 30,000 bricks per ten hours.

Height ..... 3' 8"

Floor space occupied ..... 4' x 3' 4"

Weight, 4,000 pounds.



# No. 2 CORRUGATED CRUSHER, STYLE "P"

PATENTED

This Crusher is constructed for yards desiring only limited capacity. Owing to its patented features of construction, it is superior to other crushers of similar size upon the market.

## ROLLERS

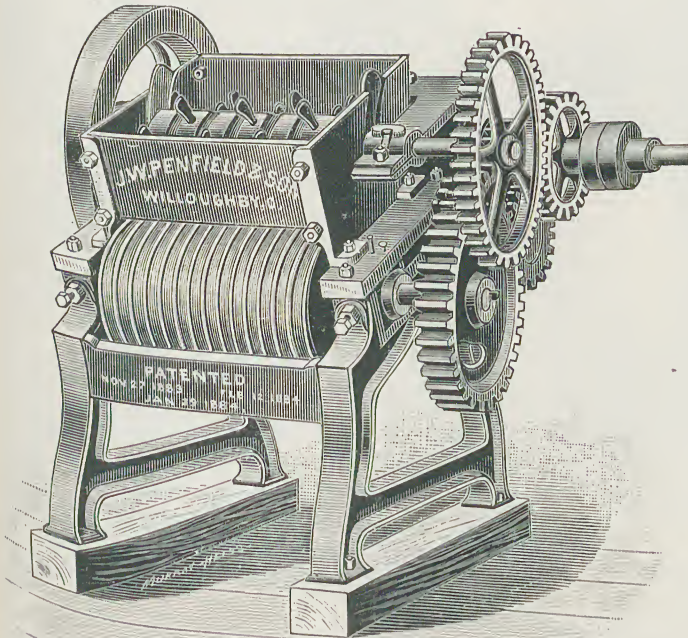
The rollers are thoroughly chilled, and provided with our patented Spiral Corrugations. They are arranged with the form of corrugations described in the article upon differential motion crushers; consequently, one roller revolves twice as fast as the other, which is advantageous in many cases. Size of rollers, 14 inches in diameter, 22 inches long. The roller farthest from the pulley shaft is adjustable.

## PULLEYS, SPEED AND CAPACITY

The pulleys are 32 inches in diameter, 8-inch face, and should make 200 revolutions per minute. The Crusher will handle sufficient clay for from 15,000 to 20,000 brick per day.

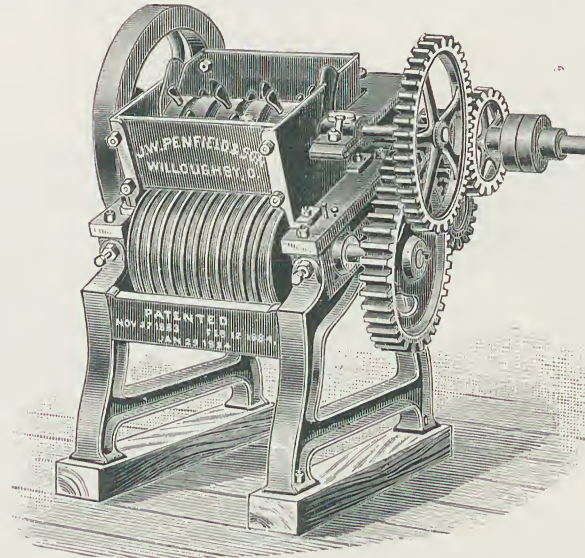
Height to top of hopper .....	4'.
Floor space occupied .....	4' x 5'.

Weight, 3,300 pounds.



# No. 7 CORRUGATED CRUSHER, STYLE "P"

PATENTED



This Crusher is the smallest size we make, and is designed for use in small tile factories. It is back geared, and runs easy and strong.

## ROLLERS

The rollers are thoroughly chilled, provided with our patent Spiral Corrugations, and arranged for differential motion. Size of rollers 14 inches in diameter by 18 inches long. The roller farthest from the pulley shaft is adjustable.

## PULLEYS, SPEED AND CAPACITY

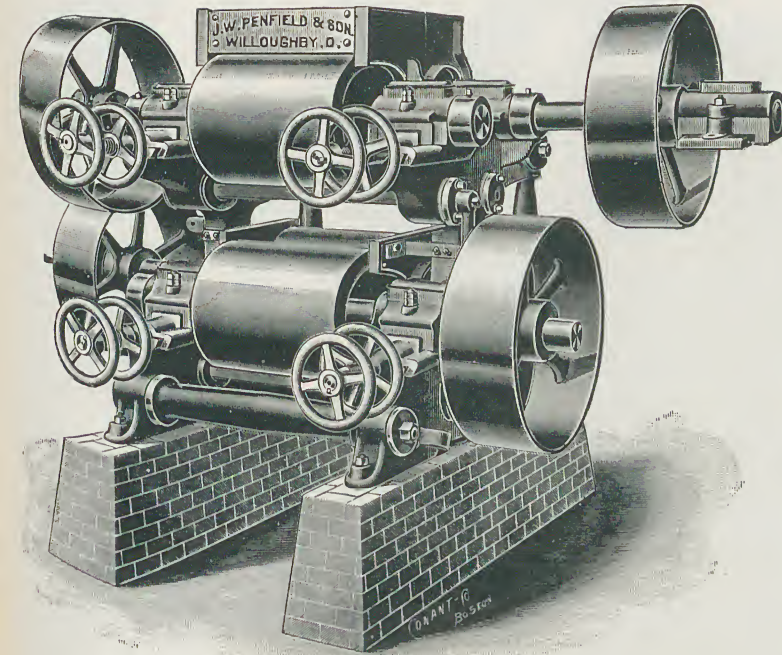
The pulleys are 32 inches in diameter, 8-inch face, and should make 200 revolutions per minute. The Crusher will handle clay for from 10,000 to 15,000 brick per ten hours.

Height to top of hopper .....	4'
Floor space occupied .....	4' x 4' 6"

Weight, 2,700 pounds.

# SMOOTH ROLL CLAY CRUSHERS, STYLE "P"

## No. 9 OR 24-INCH FOUR ROLL CRUSHER



This Crusher is constructed in a very careful manner, and is designed for especially fine work. The bearings are long and of improved design, and each roller shaft is provided with a strong, nicely fitted and polished set collar to prevent end motion.

### CRUSHING ROLLERS

The rollers are each 18 inches in diameter and 24 inches long, and are ground off perfectly true after being cast, consequently they can be set as close together as desirable, ensuring the thorough reduction of the material passing through the Crusher.

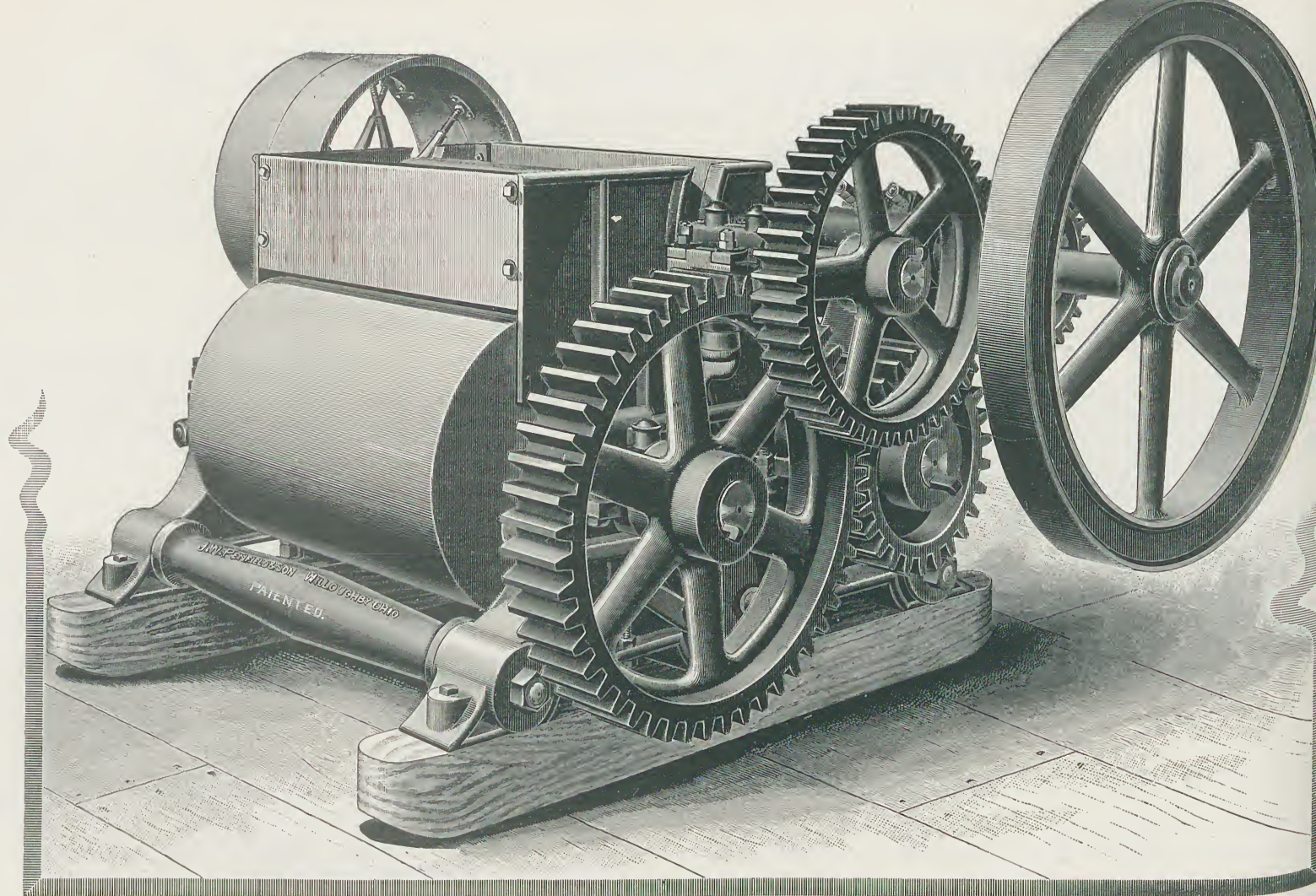
### HAND WHEELS

Both sets of rollers are provided with sets of hand wheels, by means of which the distance between the rollers can be quickly regulated. The second hand wheel of each set acts as a jam nut and rigidly maintains the position of the rollers when adjusted. As a rule, the upper rollers are set wider apart than the lower ones.

### PULLEYS AND SPEED

No gears or frictions are used, but each roller is driven by a separate pulley and belt, and has an independent, positive motion. The pulleys regularly furnished are 30 inches in diameter, 10-inch face, and should make about 250 revolutions per minute. The Crusher complete weighs 12,400 pounds. Length of sills, 5 feet. Width of Crusher, 10 feet 8 inches. Height of Crusher, 5 feet 6 inches.





No. 10 "S" Differential Motion Smooth Roll Crusher. Style "P."

PATENTED.

## No. 10 "S" CRUSHER, STYLE "P"

PATENTED

The accompanying cut represents our No. 10 "S" Smooth Roll Crusher. The manner of the construction of this Crusher is unexcelled, and ample provisions for strength and durability have been made throughout. The gearing is of the most approved pattern, and the Crusher is provided with our patent Automatic Relief Feeder, and is in every way a first-class reliable machine.

### ROLLERS

The rollers are thoroughly chilled, are ground perfectly true after being cast, and can be set very close together. They are so geared as to produce differential motion, and are 24 inches in diameter by 36 inches long.

### PULLEYS, SPEED AND CAPACITY

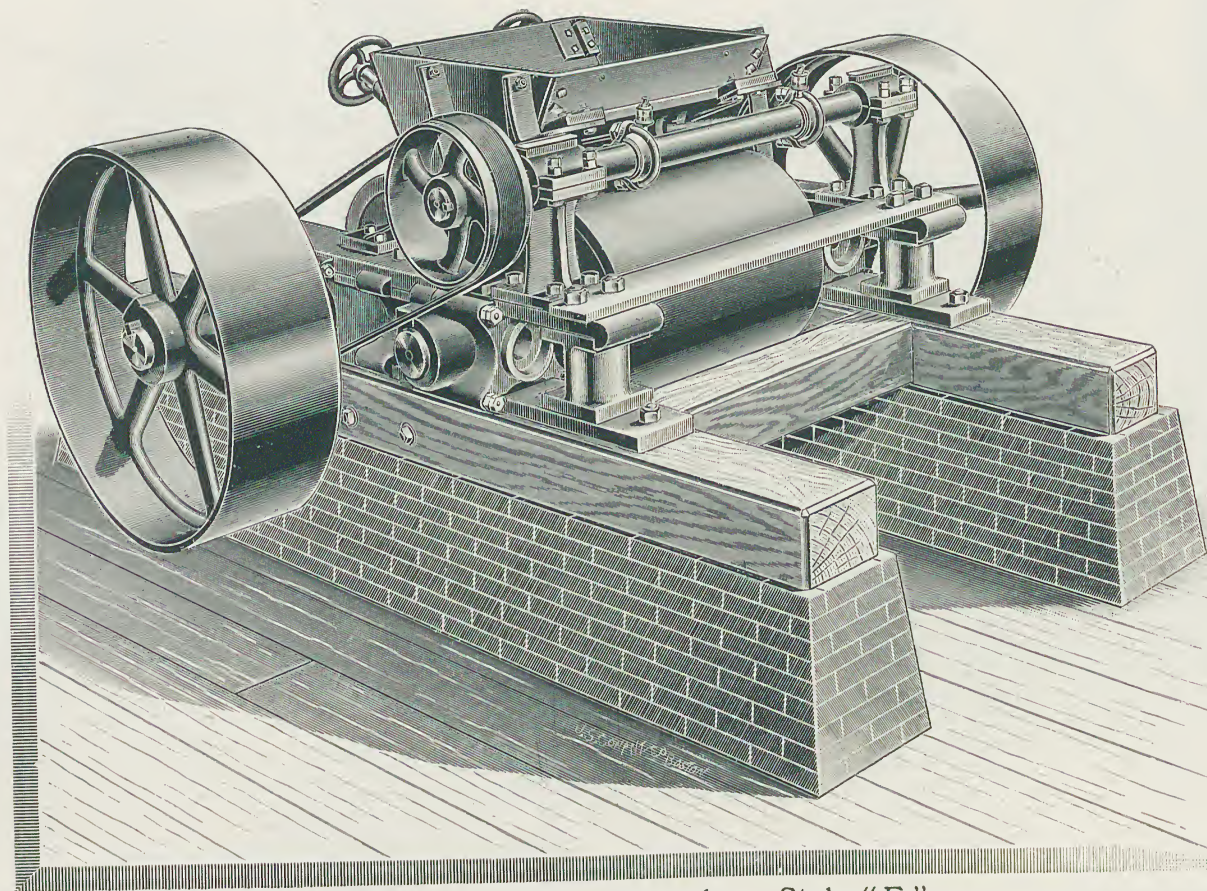
The pulleys are 42 inches in diameter, 12-inch face, tight and loose, and should make 150 to 175 revolutions per minute. The Crusher will handle sufficient clay for from 30,000 to 50,000 brick per day.

Height..... 4".

Floor space occupied..... 3' 6" x 6' 4".

Approximate weight, 12,000 pounds.





No. 12 Smooth Roll Crusher. Style "F."



## No. 12 SMOOTH ROLL CRUSHER, STYLE "F"

This machine is adapted for reducing dry tailings of shale, fire-clays, or any other refractory or silica clays.

### FRAME AND ROLLS

The frame is made of wrought iron. The rolls, 20 inches diameter, 26 inches long, are made of chilled iron, with steel shafts through them, properly keyed. The rolls in this Crusher are ground to a smooth bearing surface, so that they may be set as close together as desired, in order to thoroughly reduce the tailings.

The rolls are run at differential speed. This also insures additional reduction of the material passing through the Crusher.

### THE FEED

The tailings are fed into the rolls by means of a vibrating apron, and the flow of material is evenly regulated by adjusting hand wheels.

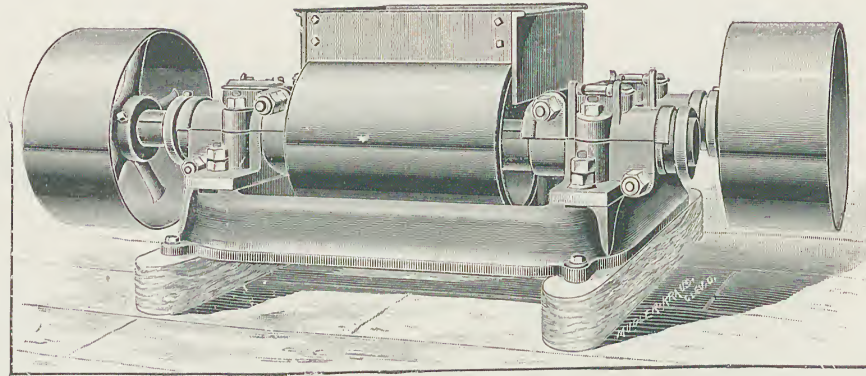
### PULLEY, SPEED AND CAPACITY

The driving pulleys are 34 inches diameter, 12 inches face, and should run at a speed of 175 and 250 revolutions per minute, respectively.

This Crusher will prepare dry tailings for from 25,000 to 40,000 standard sized brick per day of 10 hours.

Weight, 4,765 pounds.

## No. 6 SMOOTH ROLL CRUSHER, STYLE "P"



This Crusher is built from new patterns, and is of neat, self-contained design. The accompanying cut will give a good idea of its construction. The shafting is heavy and the journals long, and easily accessible for oiling.

### ROLLERS

The rollers are thoroughly chilled and ground off perfectly true after being cast. They are 18 inches in diameter, and 24 inches long, one roller being adjustable so that the distance between the rolls can be easily regulated. The roller shafts are extended out long enough to receive driving pulleys, no gears being used.

### PULLEYS, SPEED AND CAPACITY

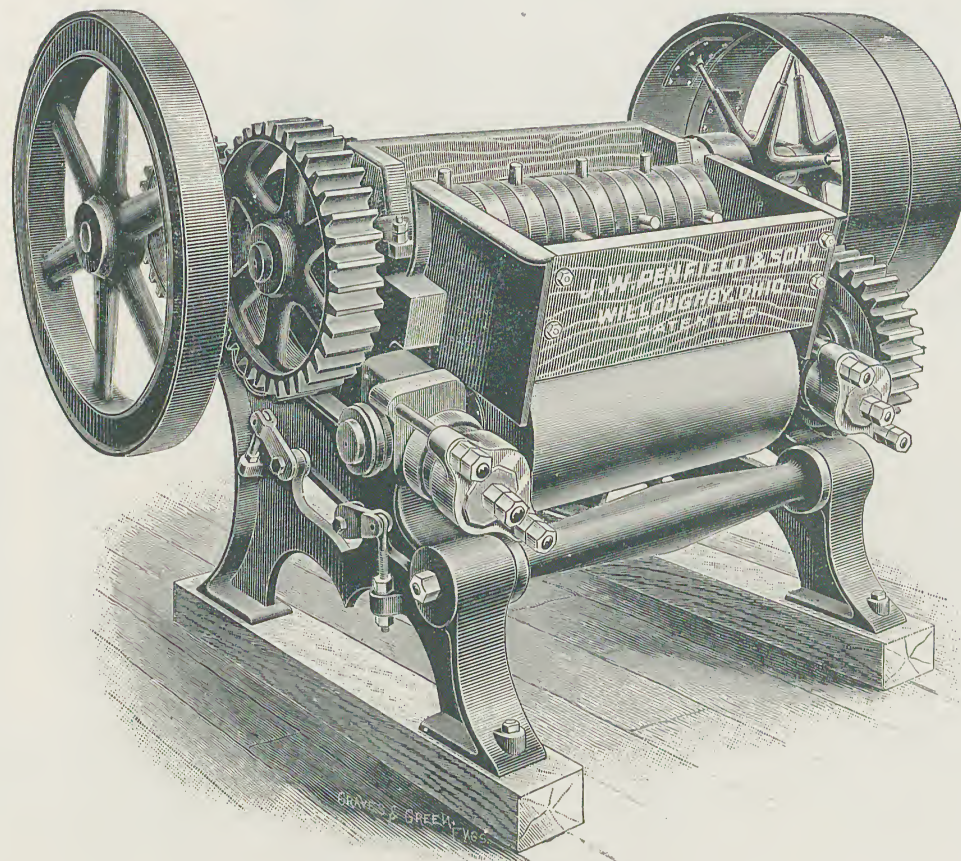
The rollers can be driven at equal or differential speeds, as may be desired. The pulleys regularly furnished are 30 inches in diameter, 10-inch face, and should make about 400 revolutions per minute. The Crusher will handle material for from 20,000 to 30,000 brick per ten hours.

Width of base.....	4' 1".
Length of sills.....	5' 3".

Weight, 4,600 pounds

## No. 11 SMOOTH ROLL CRUSHER, STYLE "P"

This Crusher is built on the same principle and is of the same general design as the No. 6 Crusher, but is smaller and of less capacity. The rollers, which are 14 inches in diameter and 18 inches long, are thoroughly chilled, and ground perfectly true after being cast. The Crusher will handle material for 10,000 to 15,000 brick per ten hours. Weight, 3,000 pounds.



No. 1 Smooth Roll Crusher. Style "P."

PATENTED.



## No. 1 SMOOTH ROLL CRUSHER, STYLE "P"

PATENTED

The No. 1 Smooth Roll has the same framework, gearing and patent Automatic Relief Feeder as the No. 3 Crusher, but is provided with smooth rollers. The rollers are chilled, and are 15 inches in diameter, 26 inches long. The roller farthest from the pulley is adjustable, and is provided with car springs behind the boxes. If desired, the rollers will be ground off perfectly true, at an additional cost.

### PULLEY, SPEED AND CAPACITY

The pulleys are 32 inches in diameter, 8-inch face, and should make 150 to 200 revolutions per minute. The machine has a crushing capacity of sufficient clay for from 15,000 to 25,000 brick per ten hours.

Height..... 3' 10".

Floor space occupied..... 4' x 3' 4".

Weight, 4,000 pounds.

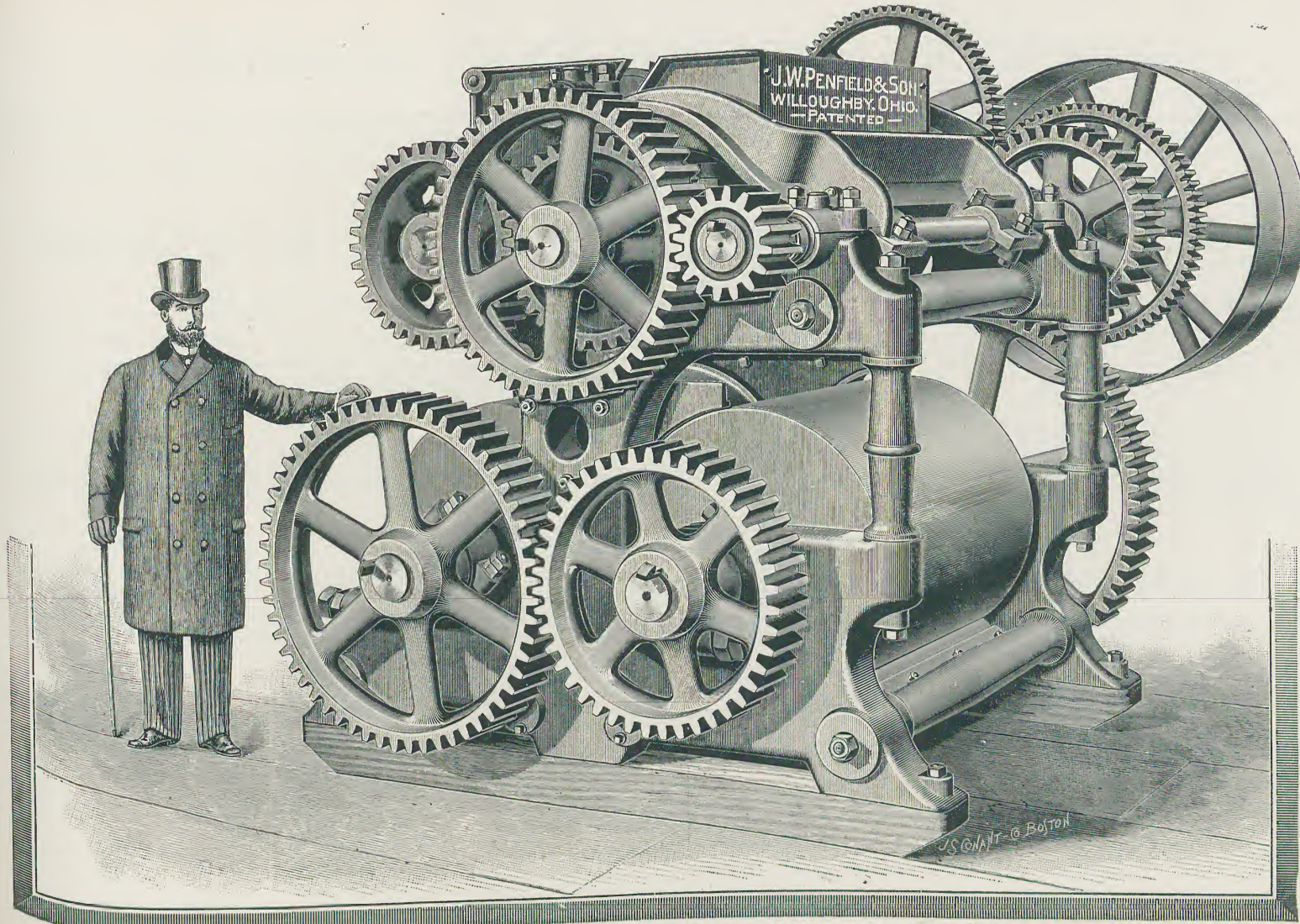
## No. 5 SMOOTH ROLL CRUSHER, STYLE "P"

### DIFFERENTIAL MOTION

PATENTED

The Crusher is of the same size as the No. 1 Crusher described above, but the rollers are arranged to run at differential speeds. This makes the Crusher especially suitable for working clay with limestone in it. We do not advise the use of such clay if it can be avoided, but if material free from limestone cannot be secured, our differential motion crushers will prove of material assistance, reducing the particles of limestone and diminishing their injurious effects.

This Crusher is provided with the Automatic Relief Feeder. Ground rollers can be furnished at additional cost. Weight, 5,400 pounds.



No. 20 Compound Four-Roll Patent Clay Crusher and Stone Separator. Style "P."



# COMPOUND FOUR-ROLL CLAY CRUSHERS.

These Crushers have corrugated rollers above and smooth rollers below. The corrugated rollers separate the larger stones from the clay, and rapidly take through the clay, putting it in the best possible condition for the lower rollers, which are ground off perfectly true, and can be set very close together. The lower rollers run at differential motion.

The smooth rollers are considerably larger in diameter than the upper ones, so that even when set close together, they will take the clay through as fast as the upper rollers supply it.

Our Compound Crushers embody all the advantages of corrugated, smooth roll and differential motion crushers.

## No. 20 COMPOUND CLAY CRUSHERS, STYLE "P"

PATENTED

The No. 20 Compound Crusher is the largest and strongest machine of the kind upon the market. It is provided with our Patent Automatic Relief Feeder.

### ROLLERS

The upper corrugated rollers are 24 inches in diameter and 42 inches long, with car springs behind the boxes of the adjustable roller. The lower smooth rollers are 36 inches in diameter, and 42 inches long, ground true, and geared to run at differential motion.

### PULLEYS, SPEED AND CAPACITY

The pulleys are 42 inches in diameter, and 12-inch face, tight and loose, and should make about 150 revolutions per minute. Crushing capacity, clay for from 60,000 to 80,000 brick per day.

Extreme height ..... 8' 8".

Floor space occupied ..... 7' 4" x 6' 8".

Approximate weight, 27,000 pounds.



# THE No. 10 "D" COMPOUND CLAY CRUSHERS, STYLE "P"

PATENTED

This Crusher is constructed on the same general plan as the No. 20, but is smaller and of less capacity. It is provided with our Patent Automatic Relief Feeder.

## ROLLERS

The upper corrugated rollers are 17 inches in diameter, 36 inches long, with heavy car springs behind the boxes of the adjustable roller. The lower smooth rollers are 24 inches in diameter and 36 inches long, ground off perfectly true, and geared to run at different speeds.

## PULLEYS, SPEED AND CAPACITY

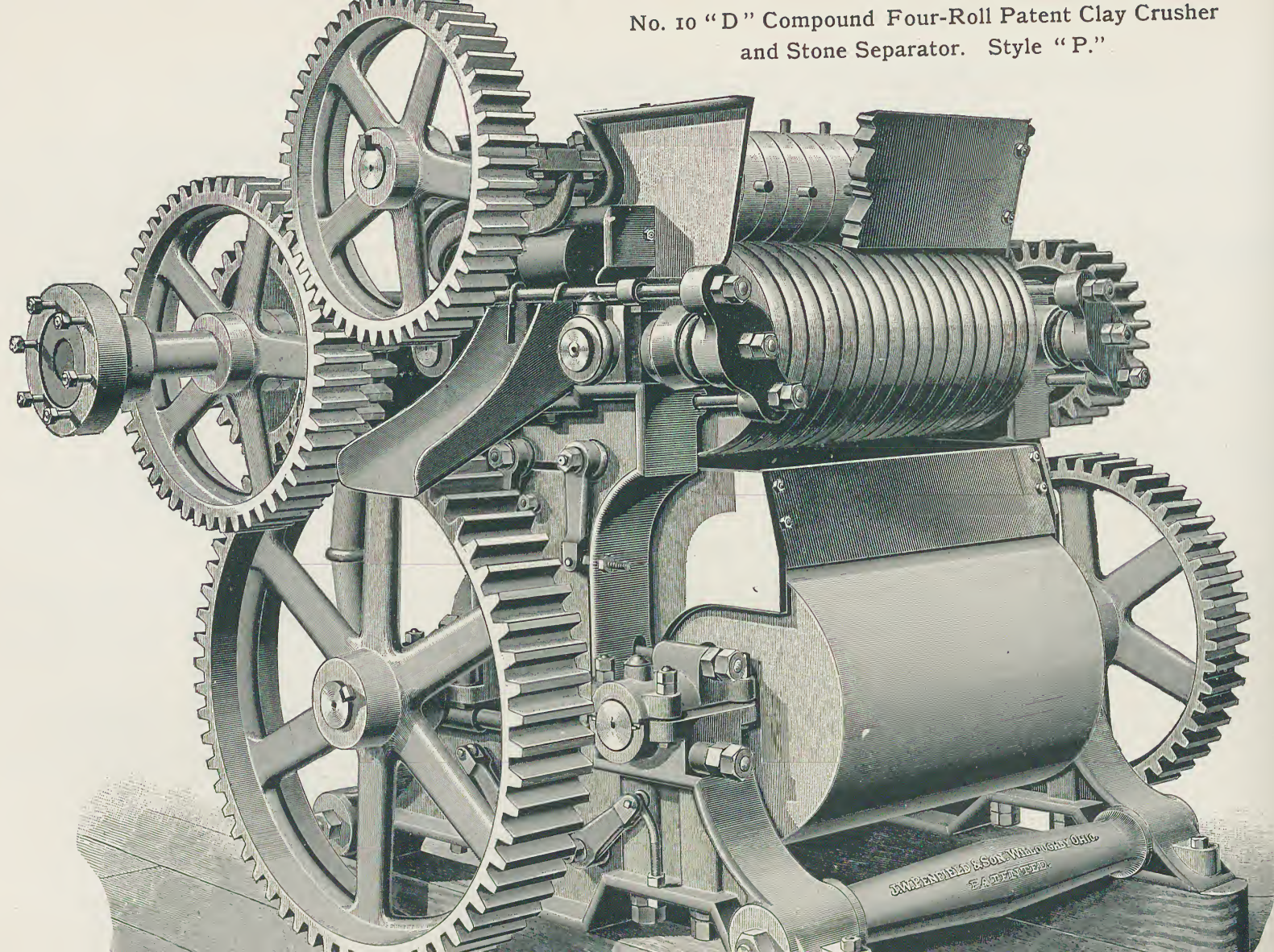
The pulleys are 42 inches in diameter, 12-inch face, tight and loose, and should make about 150 revolutions per minute. The machine has a crushing capacity of sufficient clay for 40,000 to 60,000 brick per day.

Height..... 5' 6".

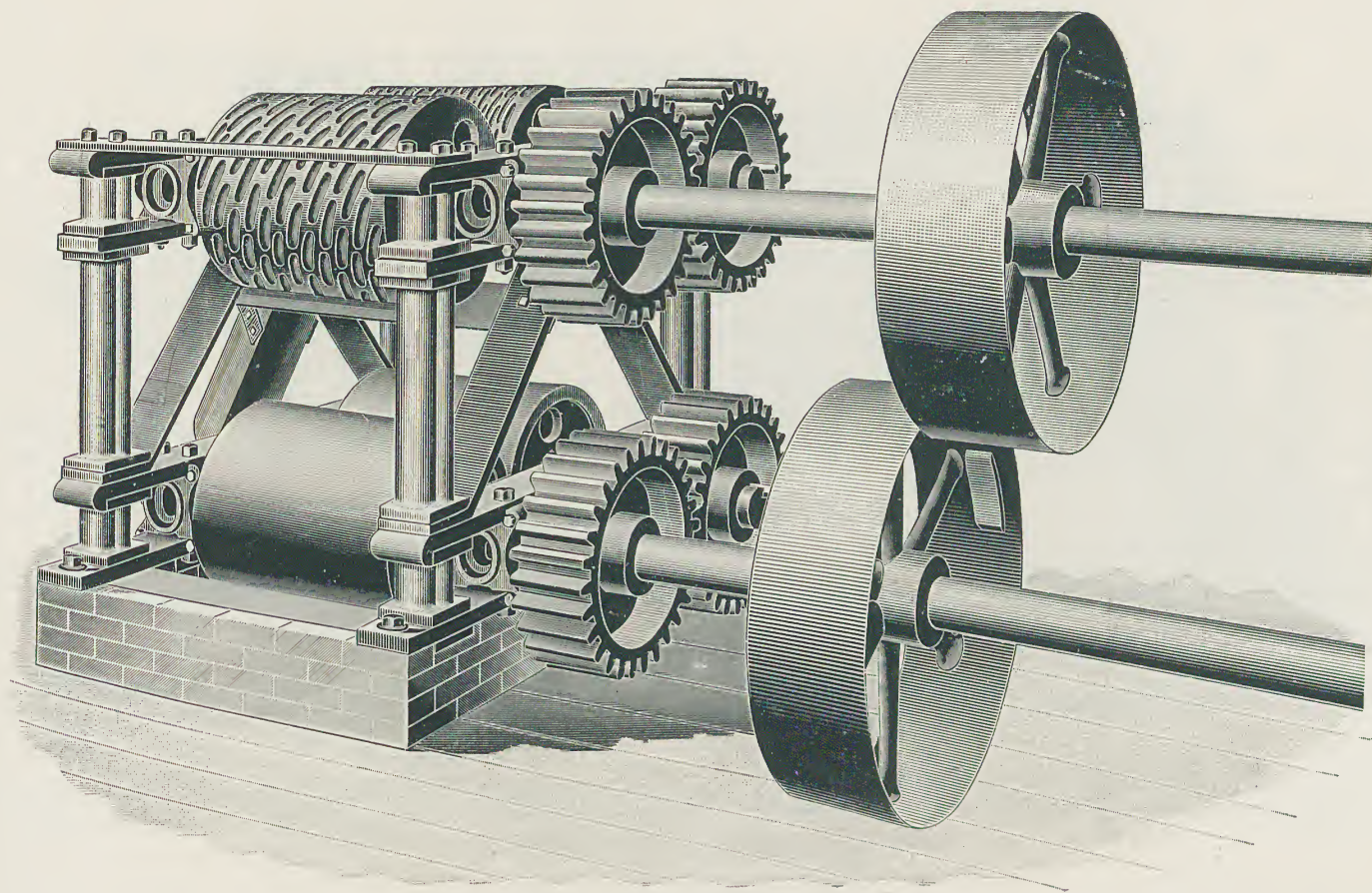
Floor space occupied..... 4' 6" x 6' 6".

Estimated weight, 16,000 pounds.

No. 10 "D" Compound Four-Roll Patent Clay Crusher  
and Stone Separator. Style "P."







No. 8. Four-Roll Compound Crusher.



## No. 8 FOUR ROLL COMPOUND CRUSHER

The No. 8 Crusher is the largest size we manufacture.

### FRAME AND ROLLS

The frame is made of wrought iron. The rolls, 20 inches diameter, 26 inches long, are made of chilled iron, and are keyed on steel shafts and perfectly balanced. Each pair of rolls is driven by independent belts.

The driven rolls of each pair are provided with sliding journal boxes, which are backed up by heavy steel coil springs, so as to regulate the space between the rolls.

In order to suit the great variety of material to be crushed, we manufacture three styles of rolls to be used for the upper pair. For lumpy or stony clays we supply either the patent stone separating or conical rolls, and for clays of alluvial nature we supply the smooth-face roll.

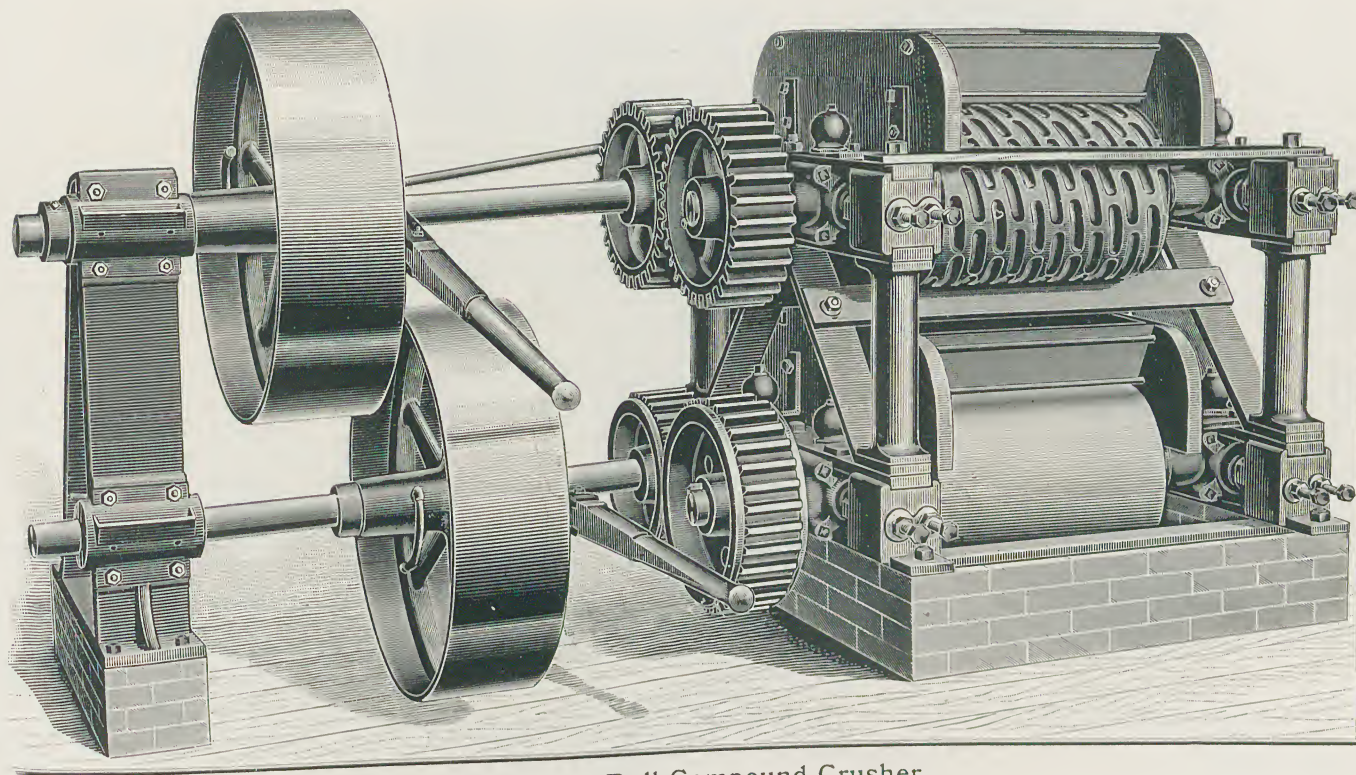
### SCRAPERS

This Crusher is supplied with four steel scrapers which are attached to brackets and arranged so as to adjust them to the face of the rolls.

### PULLEYS, SPEED AND CAPACITY

The pulleys are 36 inches diameter, 10 inches face. Speed of top pulley, 300 revolutions per minute ; speed of lower pulley, 325 revolutions per minute.

Capacity, from 50,000 to 75,000 standard sized brick per day of 10 hours, depending upon the kind and condition of clay to be crushed. Weight, 12,000 pounds.



No. 7 Four-Roll Compound Crusher.

# No. 7 FOUR-ROLL COMPOUND CRUSHER

## FRAME AND ROLLS

The frame is made of wrought iron. The Rolls, 16 inches diameter, 24 inches long, are made of chilled iron, and are keyed on steel shafts, and perfectly balanced. Each pair of rolls is driven by independent belts.

The driven rolls of each pair are provided with sliding journal boxes, which are backed up by heavy steel coil springs, so as to regulate the space between the rolls.

In order to suit the great variety of material to be crushed, we manufacture three styles of rolls, to be used for the upper pair. For lumpy or stony clays we supply either the patent stone separating, or conical rolls, and for clays of alluvial nature we supply the smooth face roll.

## SCRAPERS

This Crusher is supplied with four steel scrapers, which are attached to brackets and arranged so as to adjust them to the face of the rolls.

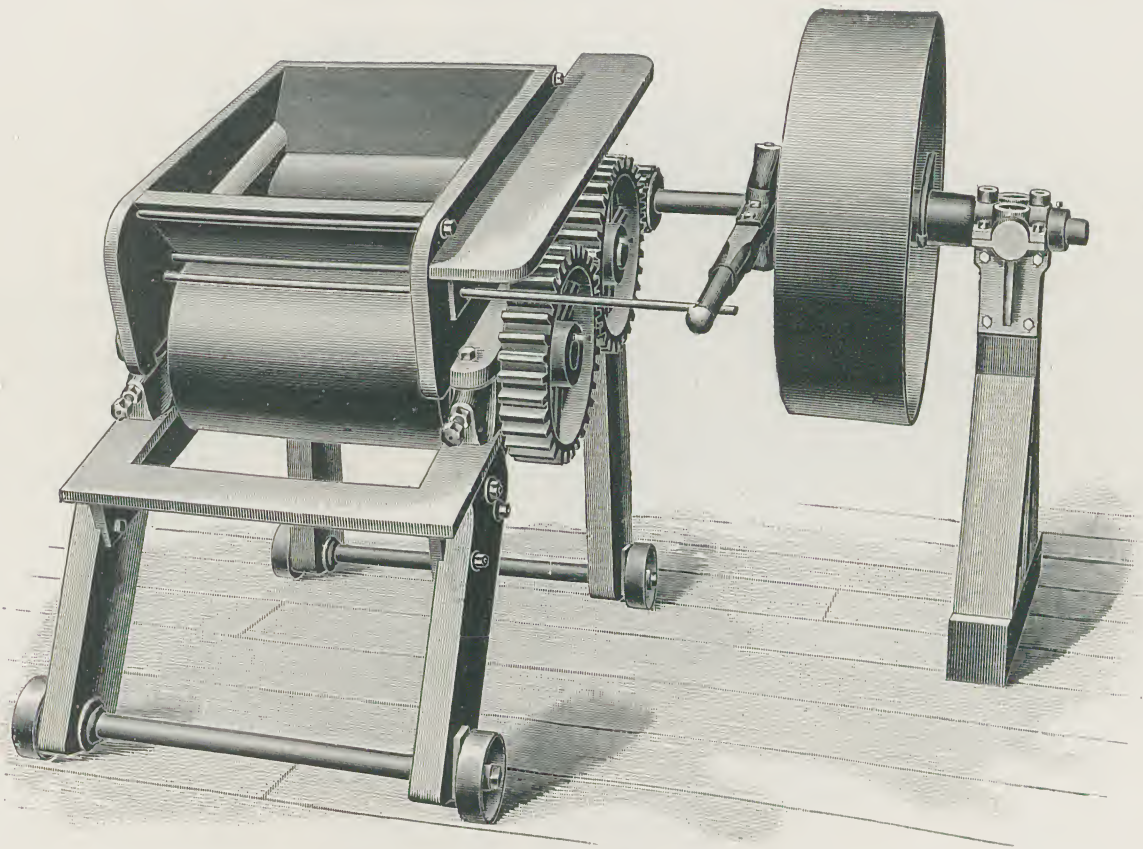
## PULLEYS, SPEED AND CAPACITY

The pulleys are 36 inches diameter, 10-inch face. Speed of top pulley 250 revolutions per minute; speed of lower pulley, 275 revolutions per minute.

Capacity, from 35,000 to 50,000 standard sized brick per day of 10 hours, depending upon the kind and condition of clay to be crushed.

Weight, 6,200 pounds.





No. 1 Two-Roll Crusher.

## NO. 1 TWO-ROLL CRUSHER

The accompanying cut shows our No. 1 Two-Roll Crusher.

### FRAME AND ROLLS

The frame is cast in one piece, and the boxes have heavy rubber springs behind them.

The rolls, made of chilled iron, are 16 inches in diameter, 24 inches long. The boxes supporting the roll farthest from the driving pulley are made adjustable, so as to regulate the space between the rollers, in order to crush the clay as may be required.

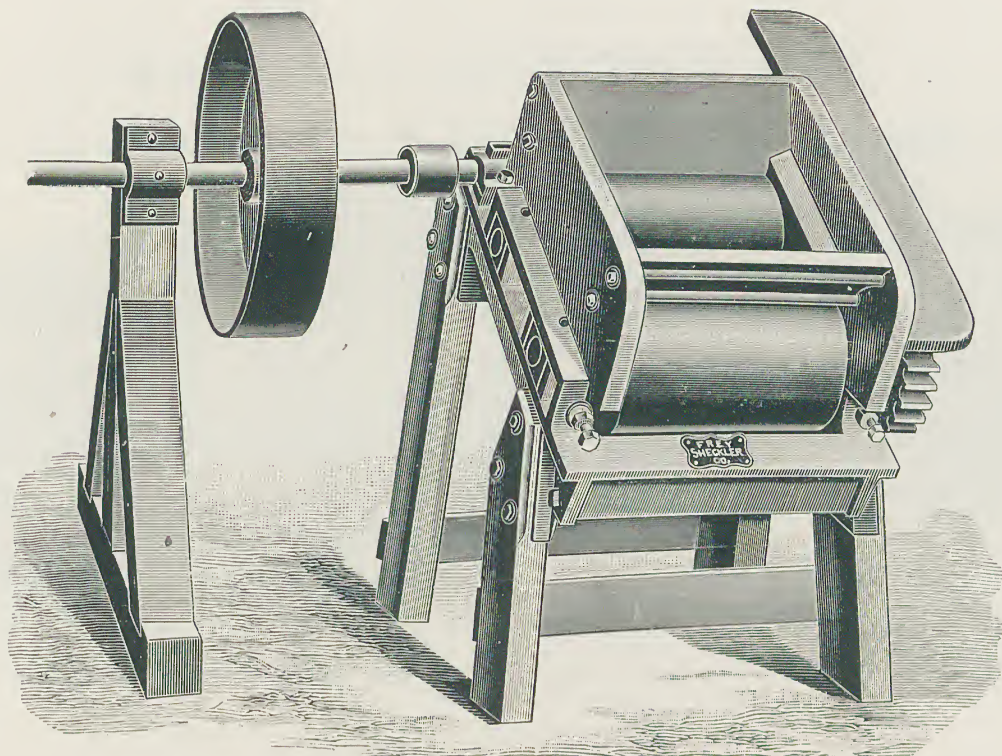
### SCRAPERS

This Crusher is provided with two steel scrapers, which are properly secured to castings with slots in them, so that the scrapers can be easily adjusted to the face of the two rolls, as the edges wear off.

### PULLEY, SPEED AND CAPACITY

The pulley is of our friction-clutch pattern, 36 inches diameter, 10-inch face, and should make 200 revolutions per minute.

This Crusher will prepare sufficient clay for from 15,000 to 25,000 standard-sized brick per day, depending upon the kind and condition of the clay. Weight, 2,700 pounds.



No. 2 Two-Roll Crusher.



## No. 2 TWO-ROLL CRUSHER

This, our No. 2 Crusher, is the smallest size we manufacture, being designed for use in small tile factories.

### FRAMES AND ROLLS

The frame is cast in one piece, and the boxes have heavy rubber springs behind them.

The rolls, made of chilled iron, are 12 inches diameter, 18 inches long. The boxes supporting the roll farthest from the driving pulley are made adjustable, in order to regulate the space between the rolls.

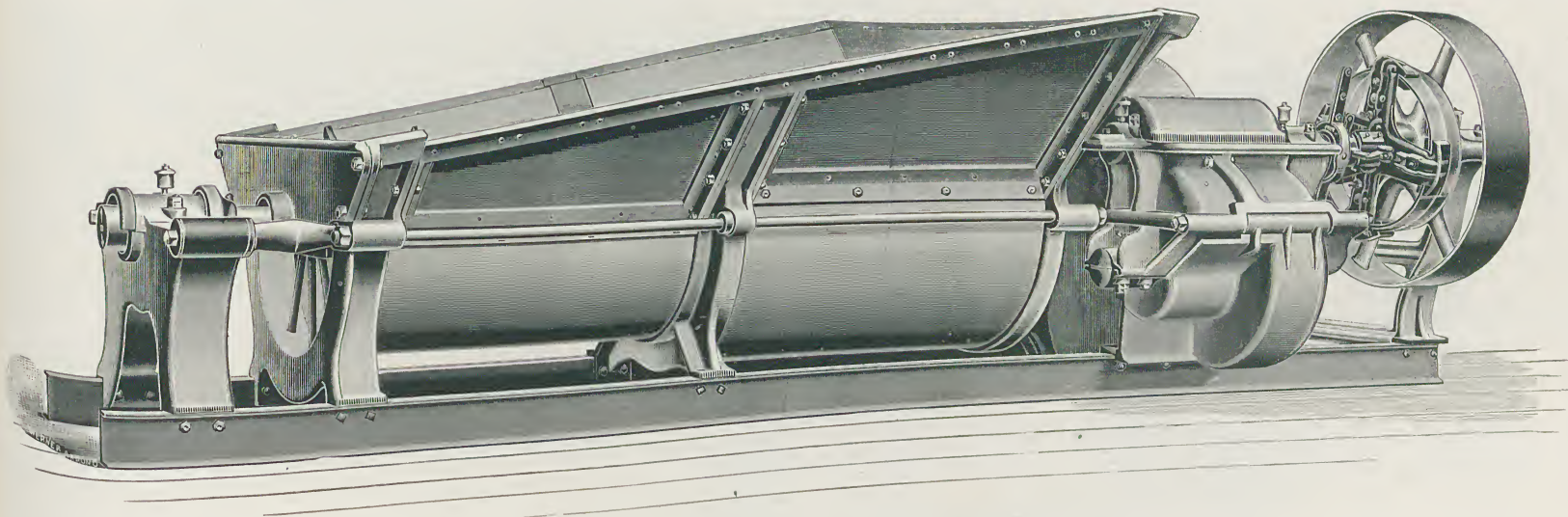
### SCRAPERS

This Crusher is provided with steel scrapers, which are properly secured to castings with slots in them, so that the scrapers can be easily adjusted to the face of the rolls as the edges wear off.

### PULLEY, SPEED AND CAPACITY

The plain machine molded pulley is 30 inches diameter, 8 inches face, and should make 200 revolutions per minute.

This Crusher will handle clay for from 10,000 to 15,000 standard sized brick per day of 10 hours, depending upon the kind and condition of the clay. Weight, 1,500 pounds.



No. 1 Clay Granulator. Style "P."

## No. 1 CLAY GRANULATOR, STYLE "P"

The accompanying illustration represents our Improved Clay Granulator, which is sufficiently large to receive three cubic yards of clay at one time. The machine breaks up the large lumps, cutting and reducing them in suitable shape for going into a crusher.

The machine is built extra heavy in all its parts, with large forged steel main shaft and adjustable wrought-iron steel-faced cutting-knives.

The gearing is extra heavy, the master wheel being 10-inch face, 3-inch pitch. The master wheel pinion is 11-inch face, while the intermediate gear and pinion are 6-inch face, 2-inch pitch. The pinions are of steel, and the gearing is neatly covered by suitable housing, ensuring greater safety and excluding grit and dirt. The machine is back geared 12 to 1, giving it a strong easy motion.

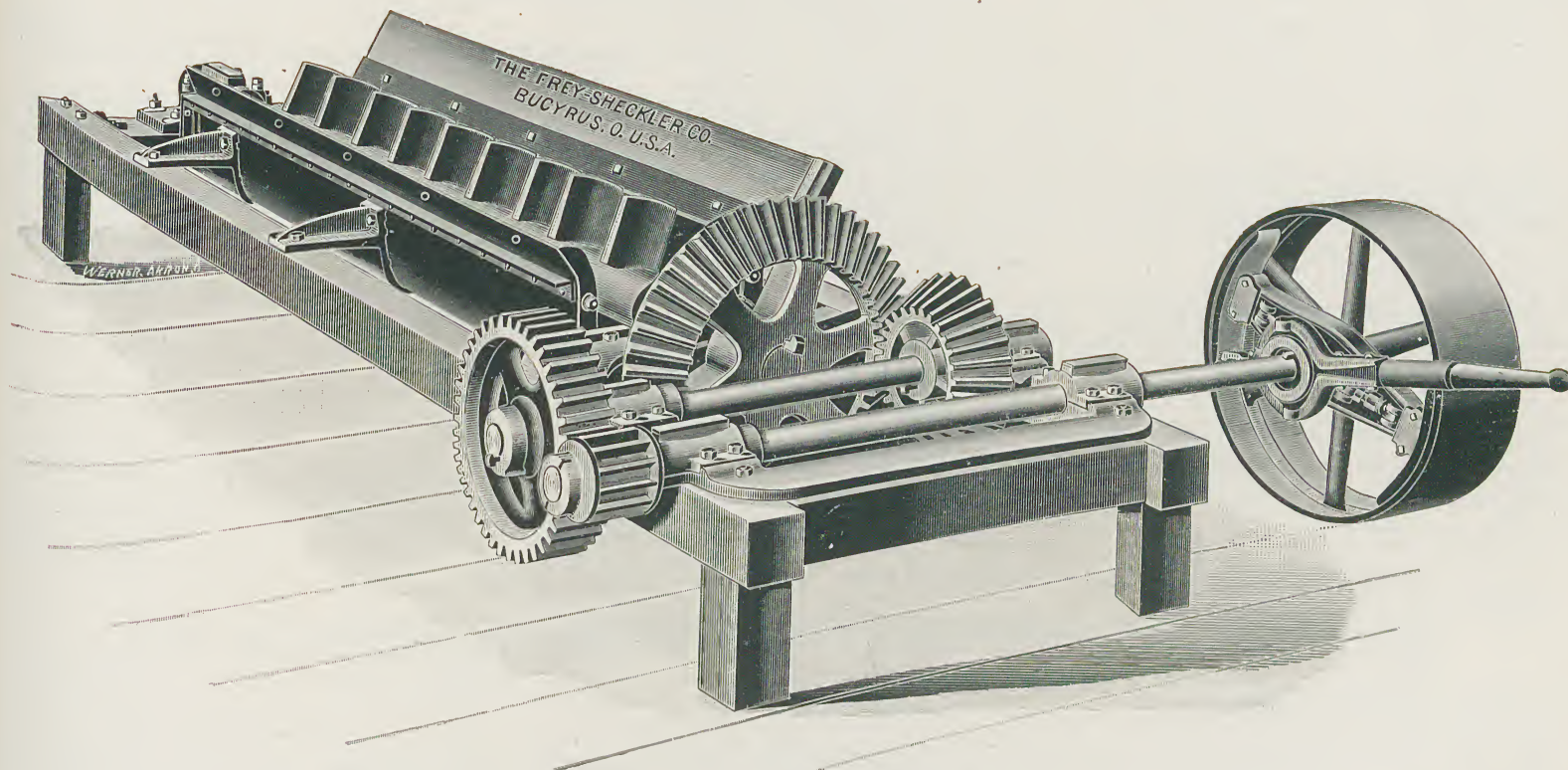
The tub is 10 feet long inside of tub, and 8 feet wide at the rear end.

The machine will handle sufficient clay for 100,000 to 150,000 brick per day.

The granulator is built throughout of iron and steel, and is the largest and most powerful machine of the kind upon the market.

The machine is provided with a friction clutch pulley, which should make 180 to 200 revolutions per minute. Weight, 19,300 pounds.





No. 1 Clay Granulator. Style "F."

## NO. 1 CLAY GRANULATOR, STYLE "F"

This machine is constructed for granulating tough, stony clays before feeding it to a crusher.

For this particular work this machine has no equal. Inasmuch as the stones are liable to get between the knives and cylinder of the machine, and break the former, a safety pin is inserted in the driving pinion so as to prevent any breakages of this character.

The clay is dumped in at the rear end by carts or dump cars, and the mixing knives tear the clay to pieces and gradually carry it along while disintegrating it, so that a constant and even stream flows into the crusher, and the rolls take it through readily.

### SHELL AND ADJUSTABLE DISCHARGE

The shell is 10 feet long; made of steel one-fourth inch in thickness. (Longer shells are made if desired.)

The discharge end of this machine is supplied with an adjustable gate so as to regulate the discharge of clay and also insure complete tempering of the clay.

### MIXING SHAFT AND KNIVES

The mixing shaft is made of hammered steel four and one-half inches square. The knives are made of chill iron and fitted on the shaft, and can be removed without taking the shaft out of the machine. They are evenly ground and polished by special machinery.

### GEARING, PULLEY AND SPEED

The gearing is very strong and of special design.

The driving pulley is of our friction clutch pattern, 36 inches in diameter, 10-inch face.

The driving pulley makes 150 revolutions per minute.

### CAPACITY AND WEIGHT

Capacity from 40,000 to 75,000 standard-size brick per day of ten hours. Weight of machine, 9,000 pounds.

## SPECIAL GRANULATING PUG-MILL, STYLE "F"

It is made either bevel or straight gear, as circumstances may require.

This machine is constructed for granulating tough, stony clays before feeding it to a crusher.

The mixing shaft is made of cast-iron, in which are inserted forged steel knives, which can be set at any pitch. The knives are held in place by keys.

The shell is made of heavy steel boiler-plate. It is provided with a four-arm friction clutch pulley, 48 inches diameter, 12-inch face. Speed, 150 revolutions per minute.

Capacity from 75,000 to 100,000 brick per day of ten hours. Weight, 15,000 pounds.

# PUG-MILLS

For assisting in tempering clay and incorporating water with it, Pug-Mills are in many factories indispensable. They are also well adapted for mixing two or more kinds of clay together, or for incorporating sand, saw-dust, grout or other material with the clay. Our line of Pug-Mills is very complete, including both open and closed top machines in a variety of sizes and styles suited to the requirements of different clays and factories. In construction and operation our Pug-Mills will be found to be thoroughly efficient and satisfactory.

## No. 25 DOUBLE SHAFT PUG-MILL

### WITH CLOSED TOP

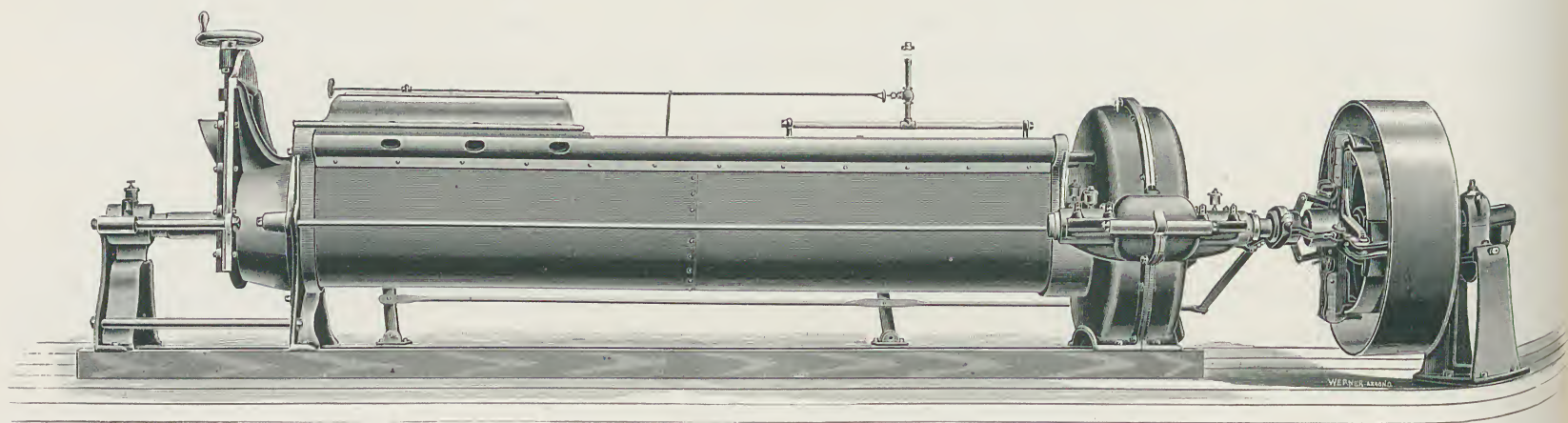
This is the largest Pug-Mill we manufacture. The shafts are extra large, provided with adjustable steel-faced wrought iron knives fitting into the shafts. The tub is made in sections, and is of heavy boiler plate. The front end of the Pug-Mill is provided with adjustable outlets.

### PULLEYS, SPEED AND CAPACITY

The pulleys are 42 inches in diameter, and 12-inch face. Speed, 180 revolutions per minute. The machine is capable of pugging clay for 100,000 to 150,000 brick daily.

We also have patterns for a first-class open-top double shaft Pug-Mill. Weight, 11,000 pounds.





No. 11 Pug-Mill. Style "P."

## No. 11 OPEN TOP PUG-MILL, STYLE "P"

The No. 11 Open Top Pug-Mill is an extra large and powerful machine, being constructed throughout of iron and steel, with forged steel main shaft and wrought iron steel faced adjustable knives.

The tub is of heavy boiler plate, 12 feet long. The front end of the tub is provided with an adjustable outlet for regulating the flow of clay from the machine.

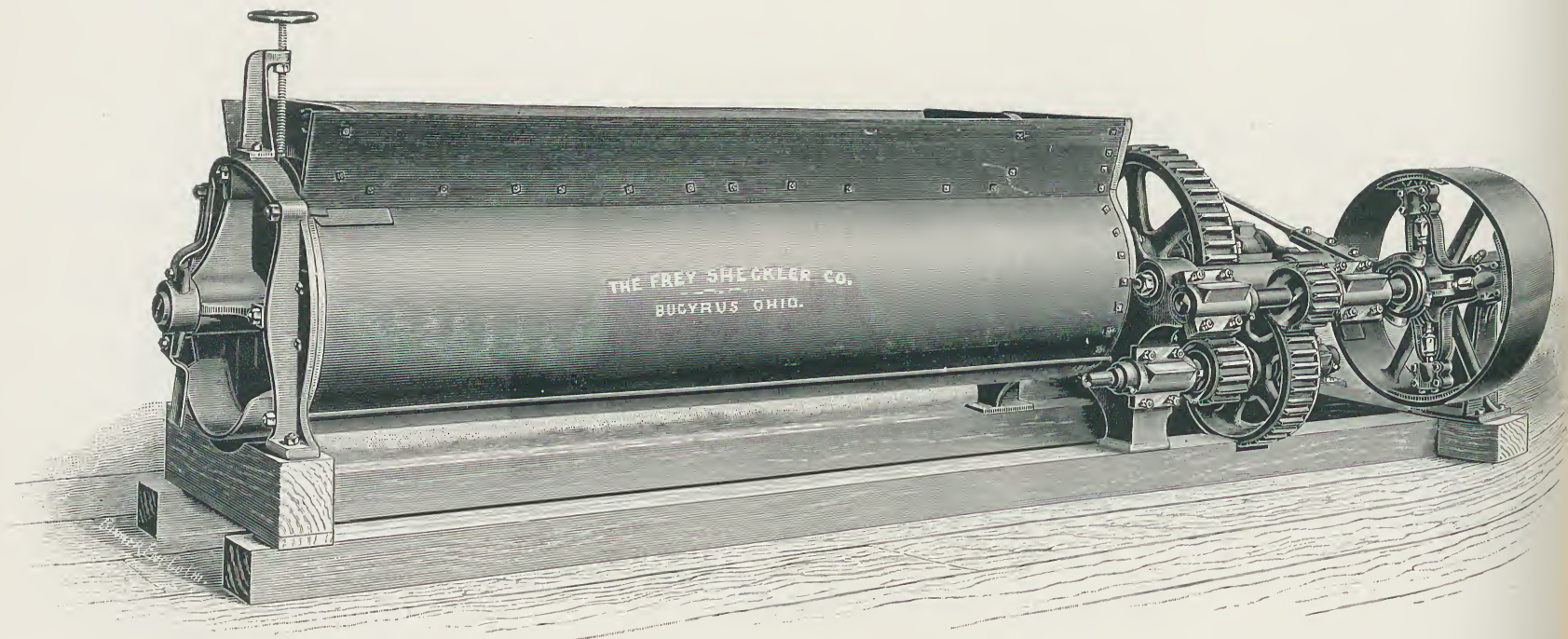
The machine is single geared, the gearing being extra heavy, and being covered by suitable housing. The tub is 12 feet long.

The machine is provided with a friction clutch pulley 48" x 12", which should make 120 revolutions per minute.

The machine is capable of preparing clay for as high as 100,000 brick per ten hours.

Floor space required, 5' 6" x 20'.

Weight, 11,000 pounds.



Nos. 12 and 14 Closed Top Pug-Mill. Style "F."



## Nos. 12 AND 14 CLOSED TOP PUG-MILLS, STYLE "F"

This machine is constructed for the tempering of fire and other refractory clays, used for the manufacturing of fire-proofing, etc.

This Pug-Mill is unequaled where the clay is required to be thoroughly pugged and mixed.

This machine is made in two sizes, viz., No. 12, 8 feet long ; No. 14, 10 feet long.

### SHELL AND ADJUSTABLE DISCHARGE

The shell is made of boiler steel,  $\frac{1}{4}$ -inch thickness. The discharge end is arranged with an adjustable gate for regulating the discharge of clay.

The top of the shell is enclosed with sectional cast-iron covers, which can readily be removed in case of necessity.

### MIXING SHAFT AND KNIVES

The mixing shaft is made of hammered steel  $3\frac{3}{4}$  inches hexagon.

The mixing knives are made of steel, fitted into socket hubs that slip on the mixing shaft, and are securely fastened with bolts.

Each knife can be set at six different positions, corresponding with the six flat sides of the shaft.

### GEARING, PULLEY AND SPEED

This machine is supplied with strong and substantial double gearing, with housing.

The driving pulley is our four-arm friction-clutch pattern, 36 inches diameter, 10-inch face.

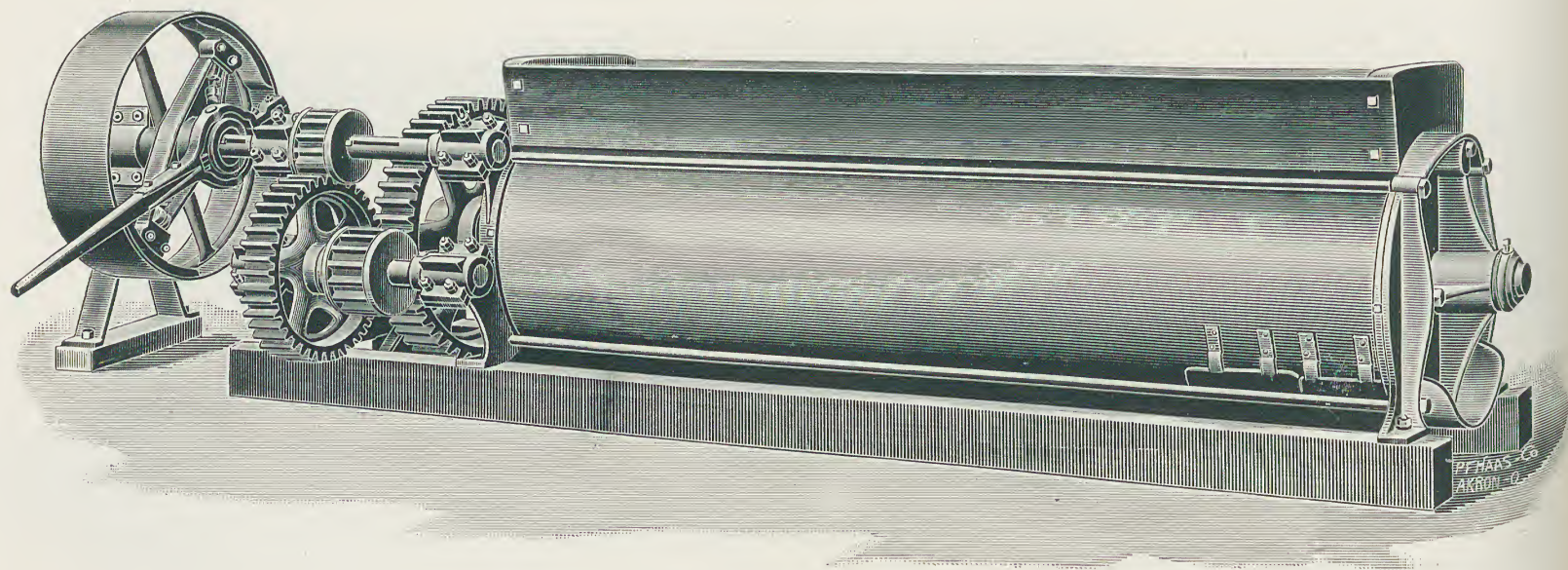
Speed, 160 to 170 revolutions per minute.

### CAPACITY AND WEIGHT

Capacity of No. 12 Pug-Mill is from 30,000 to 50,000 standard-sized brick per day of ten hours ; of No. 14, from 50,000 to 70,000 standard-

sized brick per day of ten hours, depending upon the nature of the clay.

Weight of No. 12 Pug-Mill, 7,000 pounds. Weight of No. 14 Pug-Mill, 7,600 pounds.



Nos. 5 and 6 Pug-Mill. Style "F."

## Nos. 5 AND 6 PUG-MILL, STYLE "F"

This machine is constructed for tempering clays of different natures. It is made in two sizes—viz., No. 5, 10 feet long and No. 6, 12 feet long.

### SHELL AND ADJUSTABLE DISCHARGE

The shell is made of boiler steel, one-fourth inch in thickness, and fitted into two cast-iron heads.

The discharge end of this machine is arranged with an adjustable gate for regulating the discharge of clay.

### MIXING SHAFT AND KNIVES

The mixing shaft is made of hammered steel  $3\frac{3}{4}$  inches, hexagon.

The mixing knives are also made of steel, fitted into socket hubs that slip on the mixing shaft, and are securely fastened with bolts.

The socket hubs and knives can be removed without taking the shaft out.

Each knife can be set in six different positions, corresponding with the six flat sides of the shaft, thereby giving the operator complete control of the tempering of the clay. The two knives on the outside of the pug-mill, at the delivery end, cut the clay as it emerges through the adjustable discharge; the clay then falls to the machine or conveyor below.

### GEARING, PULLEY AND SPEED

This machine is provided with strong and substantial double gearing.

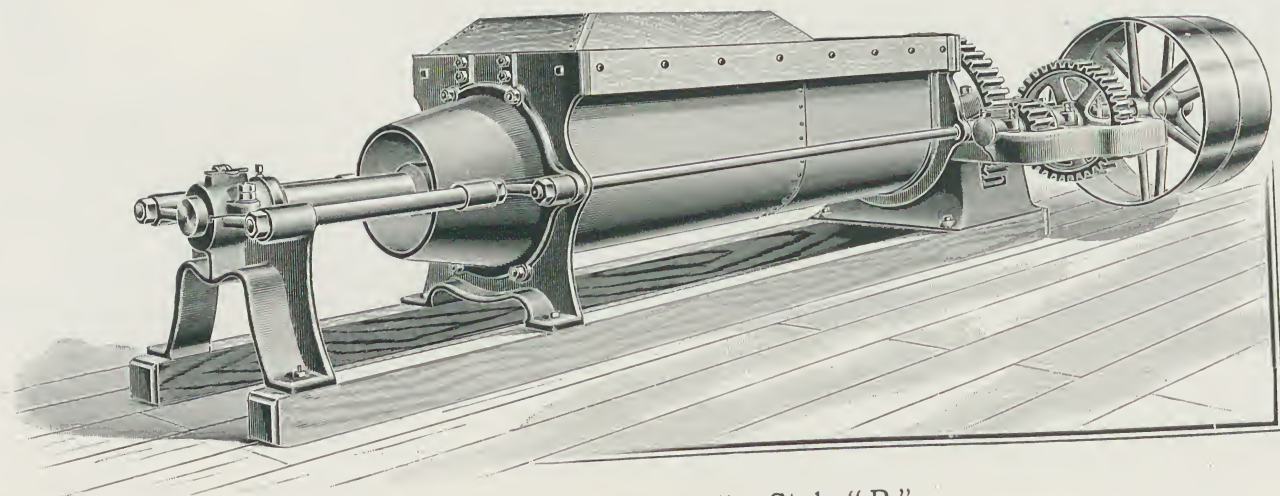
The driving pulley is of our friction-clutch pattern, 36 inches in diameter, 10 inch face. Speed, 160 to 170 revolutions per minute.

### CAPACITY AND WEIGHT

Capacity of No. 5 Pug-Mill is from 30,000 to 50,000 standard size brick in 10 hours; of No. 6 Pug-Mill, from 50,000 to 75,000 standard size brick in 10 hours, depending upon the nature of the clay.

Weight of No. 5 Pug-Mill, 5,700 pounds. Weight of No. 6 Pug-Mill, 6,200.





No. 12 Open Top Pug-Mill. Style "P."

## NO. 12 OPEN TOP PUG-MILL, STYLE "P"

This is an extra heavy double geared machine. The bearings are out of the clay. The gearing is extra heavy and strong, and in fact the machine throughout is built in an unusually serviceable, substantial manner.

### TUB

The tub is 8 feet long, at the front end of which is attached a tapering snout, 18 inches long, compressing the clay so that it is pugged under pressure.

### MAIN SHAFT AND KNIVES

The main shaft is cast iron, of large diameter, and is provided with steel-faced Norway iron knives. Thus all the wearing advantages of steel knives are secured, while if a stone or other hard substance should get between the knife and the tub, the knife will bend instead of breaking, and can be re-straightened. The knives fit into the shaft and can be readily taken out without removing the shaft itself. If the clay requires considerable pugging, the knives can be set at a smaller angle, and will feed the clay forward slowly, permitting thorough manipulation. If less pugging is needed and larger capacity is required, the angle of the knives can be increased as desired.

### PULLEYS AND SPEED

The pulleys are 32 inches in diameter, 12-inch face, tight and loose, and should make about 200 revolutions per minute.

The No. 12 Pug-Mill weighs 6,800 pounds. Width of base, 2 feet 10 inches. Extreme width of Pug-Mill, 5 feet 6 inches. Length of sills, 15 feet. Extreme length of machine, 19 feet 4 inches.

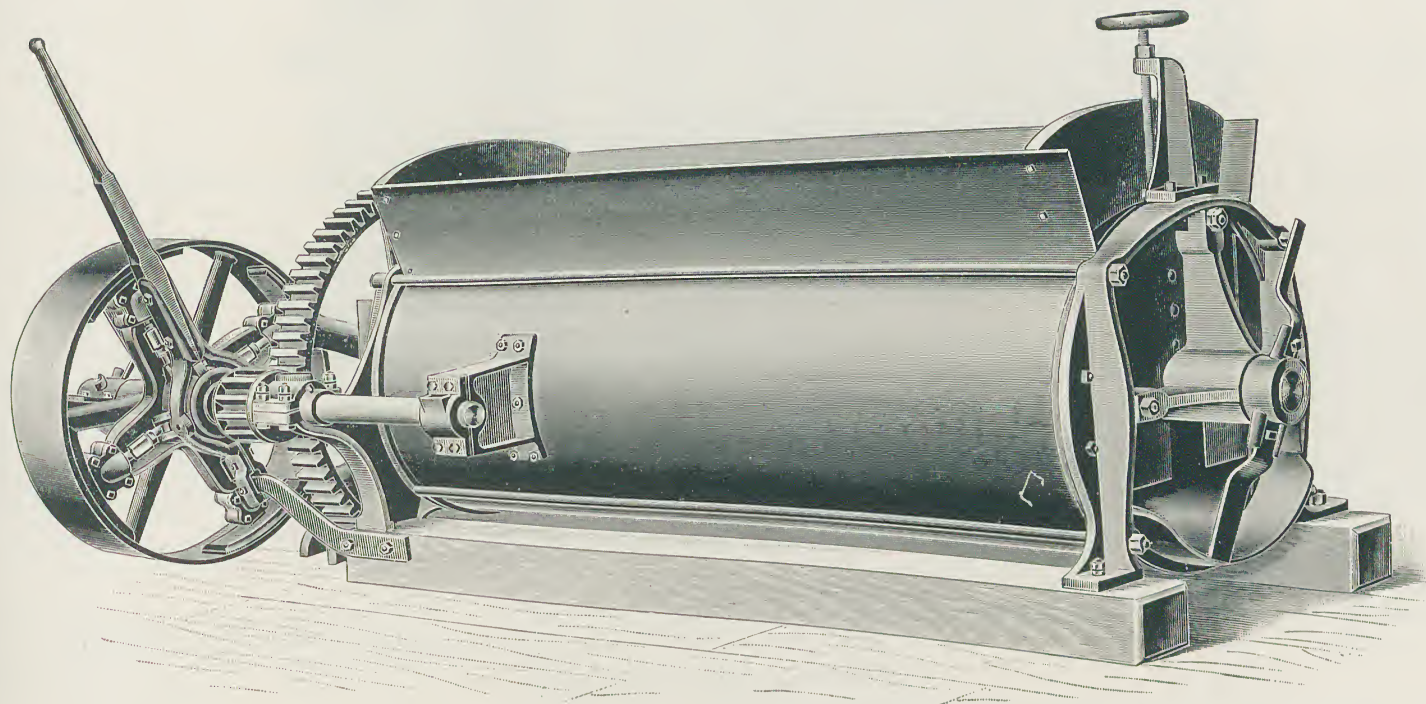
TUB

## SHAFT

## KNIVES

The pulley is 48 inches in diameter, 12-inch face, and should make about 120 revolutions per minute. Length of sills, 16 feet; machine, 5 feet. Extreme length of machine, including pulley shaft, 20 feet 6 inches; pulley shaft projects 4 feet 2 inches beyond width of base, 2 feet 11 inches; extreme width of machine, 5 feet 3 inches. Weight, 7,440 pounds.





No. 2 Pug-Mill. Style "F."

## No. 2 PUG-MILL, STYLE "F"

This machine is designed for use in the average size brick-yard.

### SHELL AND ADJUSTABLE DISCHARGE

The shell is made of boiler steel  $\frac{1}{4}$ -inch in thickness, 8 feet long, and fitted into two cast-iron heads which are securely held in position by four bolts.

The discharge end is supplied with an adjustable gate for regulating the flow of clay into the brick machine.

### MIXING SHAFTS AND KNIVES

The mixing shaft is made of hammered steel,  $3\frac{3}{4}$  inches, hexagon.

The mixing knives are made of steel, fitted into socket hubs that fit on the mixing shaft, and are securely fastened with bolts. The socket hubs and knives can be removed at will without taking the shaft out of the machine.

Each knife can be set in six different positions, corresponding with the six flat sides of the shaft, thus enabling the operator to have full control of the tempering of the clay. The two knives on the outer end of the mixing shaft are intended to cut the clay into pieces just before it passes into the brick machine.

### GEARING, PULLEY AND SPEED

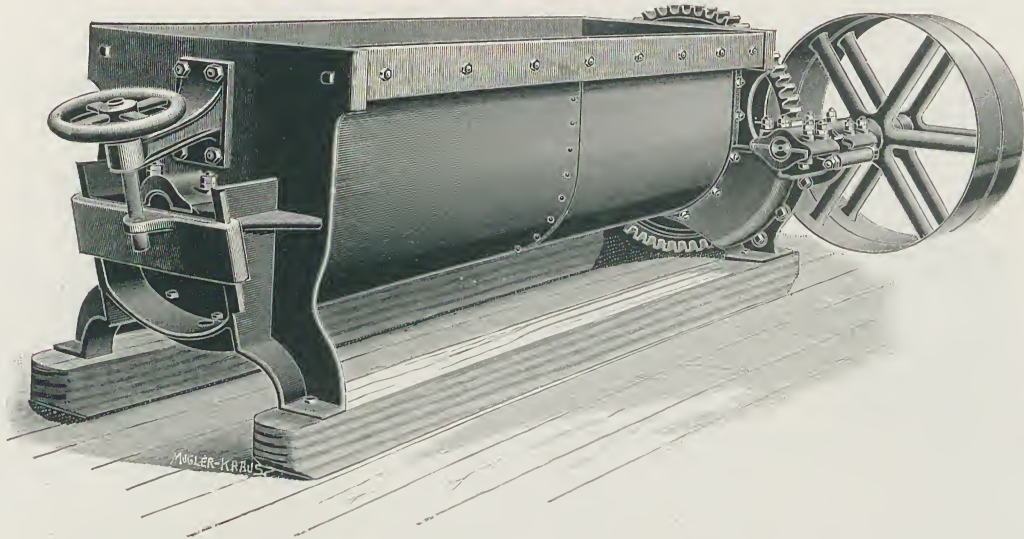
This machine is constructed with strong, improved gearing.

The driving pulley is of our friction-clutch pattern, 36 inches in diameter, 10-inch face ; speed 150 revolutions per minute.

### CAPACITY AND WEIGHT

Capacity from 30,000 to 40,000 standard size brick per day of 10 hours, depending upon the nature of the clay. Weight, 4,200 pounds.

## No. 8 OPEN TOP PUG-MILL, STYLE "P"



This is a single-gearred Pug-Mill with forged main shaft, which is enlarged at the rear bearing. The bearings are extra long and of novel pattern. The tub is of boiler plate and is 8 feet long.

### THE OUTLET

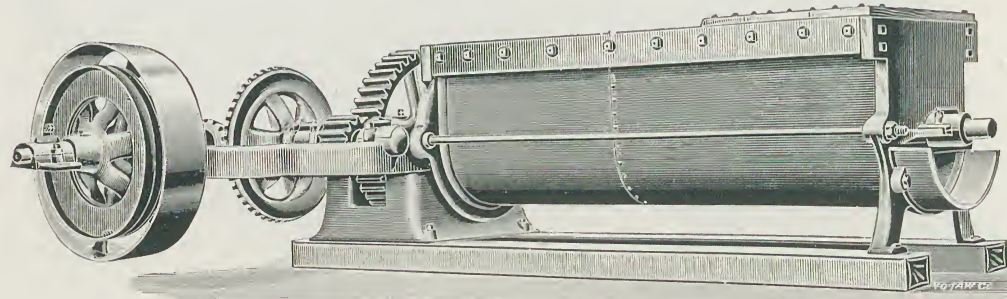
The outlet in the front of the machine is provided with an adjustable sliding door or shut-off plate, operated by a hand wheel; thus the opening can be partially or entirely closed if desired, and the amount of pugging given the clay can be readily regulated, as well as the capacity of the Pug-Mill.

### PULLEYS AND SPEED

The driving pulleys are 42 inches in diameter, 8-inch face, tight and loose, and should make about 120 revolutions per minute. The weight of the Pug-Mill is 3,750 pounds. Length of sills, 10 feet; extreme length of Pug-Mill, 13 feet; width of base, 2 feet 11 inches; extreme width of Pug-Mill, 4 feet 4 inches; height, 3 feet 7 inches.



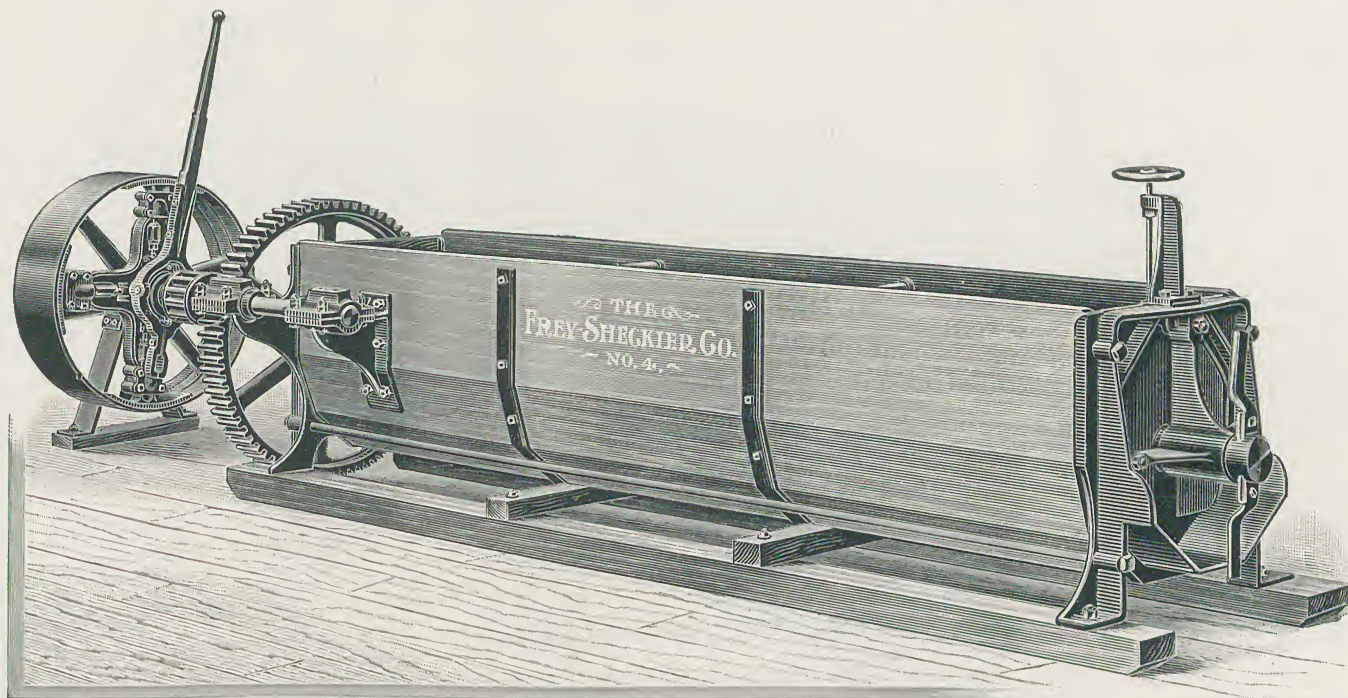
## NO. 10 BEVEL GEARED PUG-MILL, OPEN TOP, STYLE "P"



This machine is adapted for use in factories where the line shaft is at right angles with the outlet of the Pug-Mill. The machine is constructed in a strong, substantial manner throughout. The main shaft is extra heavy, and of forged steel. The knives fit over the shaft, being held in position without keying. The gearing is extra heavy. The tub is of boiler-plate 8 feet long. The journals are all long, and conveniently arranged for oiling.

### GEARING, PULLEYS, SPEED AND CAPACITY

The Pug-Mill is back geared 10 to 1. The gearing is heavy and of approved pattern. The driving pulley is 32 inches in diameter, 12-inch face, and should make from 180 to 250 revolutions per minute. The machine will handle clay for from 30,000 to 50,000 brick per day. Weight, 4,000 pounds.



No. 4 Pug-Mill. Style "F."

## **No. 4 PUG-MILL, STYLE " F"**

This cut represents our No. 4 Pug-Mill, which is very extensively used in the fire clay districts.

### **SHELL AND ADJUSTABLE DISCHARGE**

The shell is 10 feet long and made of sound seasoned timber, 2 inches thick, and fitted into cast-iron heads.

Like all of our other pug-mills, this one is also provided with an adjustable gate for regulating the discharge and temper of the clay.

### **MIXING SHAFT AND KNIVES**

The mixing shaft is made of Bessemer steel, 3 inches square.

The mixing knives are made of steel, fitted into socket hubs that slip on the mixing shaft, and are securely fastened with bolts.

The socket hubs and knives can be removed without taking the shaft out.

Each knife can be set in four different positions, corresponding with the four flat sides of the shaft.

This mill is also provided with cut-off knives at the outer end of the mixing shaft.

### **GEARING, PULLEY AND SPEED**

This machine is provided with strong and substantial gearing.

The driving pulley is of our friction-clutch pattern, 36 inches in diameter, 10-inch face.

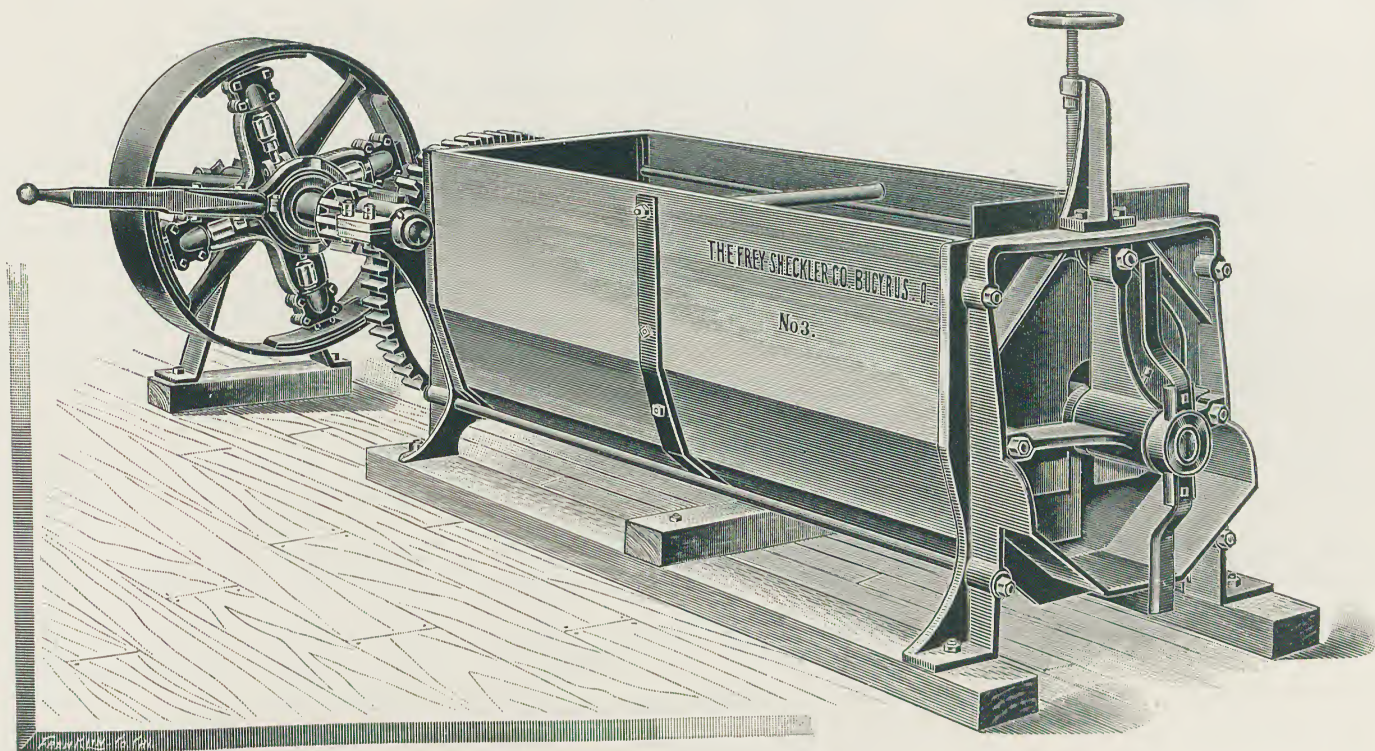
Speed, 150 revolutions per minute.

### **CAPACITY AND WEIGHT**

Capacity, 30,000 to 40,000 standard size brick per day of 10 hours, depending upon the condition of the clay.

Weight, 3,800 pounds.





No. 3 Pug-Mill. Style "F."

## **No. 3 PUG-MILL, STYLE "F"**

This cut represents our No. 3 Pug-Mill, which is very extensively used in the fire-clay districts.

### **SHELL AND ADJUSTABLE DISCHARGE**

The shell is 7 feet long and made of sound seasoned timber, 2 inches thick, and fitted into cast-iron heads.

Like all of our other pug-mills, this one is also provided with an adjustable gate for regulating the discharge and temper of the clay.

### **MIXING SHAFT AND KNIVES**

The mixing shaft is made of Bessemer Steel, 3 inches square.

The mixing knives are made of steel, fitted into socket hubs that slip on the mixing shaft, and are securely fastened with bolts.

The socket hubs and knives can be removed without taking the shaft out.

Each knife can be set in four different positions, corresponding with the four flat sides of the shaft.

This mill is also provided with cut-off knives at the outer end of the mixing shaft.

### **GEARING, PULLEY AND SPEED**

This machine is provided with strong and substantial gearing.

The driving pulley is of our friction-clutch pattern, 36 inches in diameter, 10-inch face.

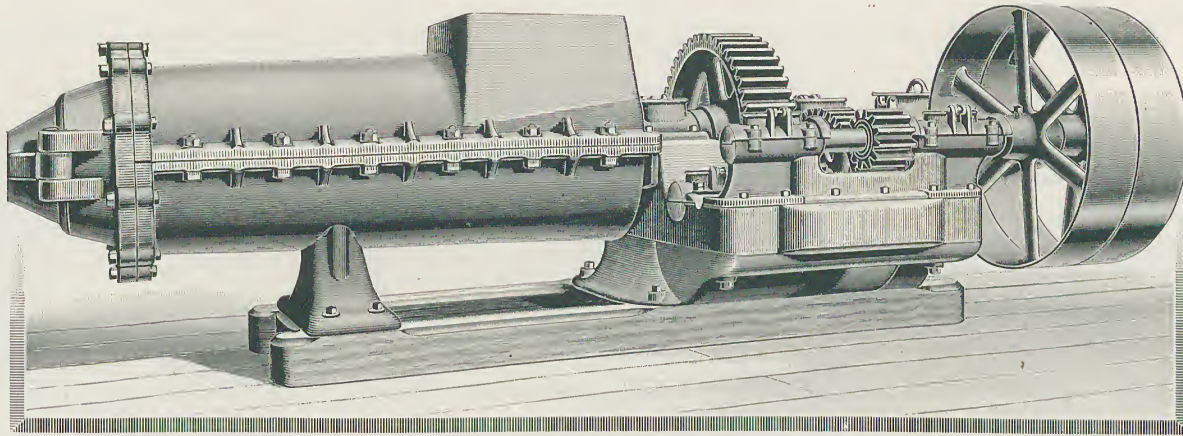
Speed, 120 revolutions per minute.

### **CAPACITY AND WEIGHT**

Capacity, 20,000 to 30,000 standard size brick per day of 10 hours, depending upon the condition of the clay.

Weight, 2,700 pounds.

## TAPER TUB PUG-MILLS.



Taper Tub Pug-Mills compress the clay and pug it under greater pressure, ensuring thorough preparation of the material. In addition to the No. 15 Pug-Mill herewith described, we make a variety of other sizes, of which we shall be glad to furnish details upon application.

### No. 15 TAPER TUB PUG-MILL, STYLE "P"

This machine is the finest taper tub Pug-Mill upon the market, being provided with the latest improvements. The machine is self-contained, and the journals are all long and convenient for oiling.

#### KNIVES

The knives are wrought iron, steel faced, securing all the wearing advantages of steel knives without their brittleness. They can be adjusted to any required angle in order to secure the necessary amount of pugging and capacity. If the clay requires considerable pugging, the knives should be arranged with a small amount of angle, while if less pugging is needed and large capacity is required, the angle of the knives can be increased, securing the desired result in either case.



## AUGER

The front end of the main shaft is provided with a revolving auger made of extra hard white metal, nicely ground and polished by special machinery.

## THE END THRUST

Two plates for sustaining the end thrust are arranged at the back end of the shaft, one of these plates interlocking with the shaft and revolving with it, the other being stationary. These two parts receive all the wear from the end thrust, are small, and can be replaced at slight expense. The shaft can be adjusted lengthwise to take up wear of the auger, thus keeping the machine up to its full capacity at all times. The bottom half of the casting holding the thrust plates forms an oil chamber, the thrust plates being so grooved as to catch the oil and distribute it over the surface of both plates, thus reducing the friction and wear.

## TUB

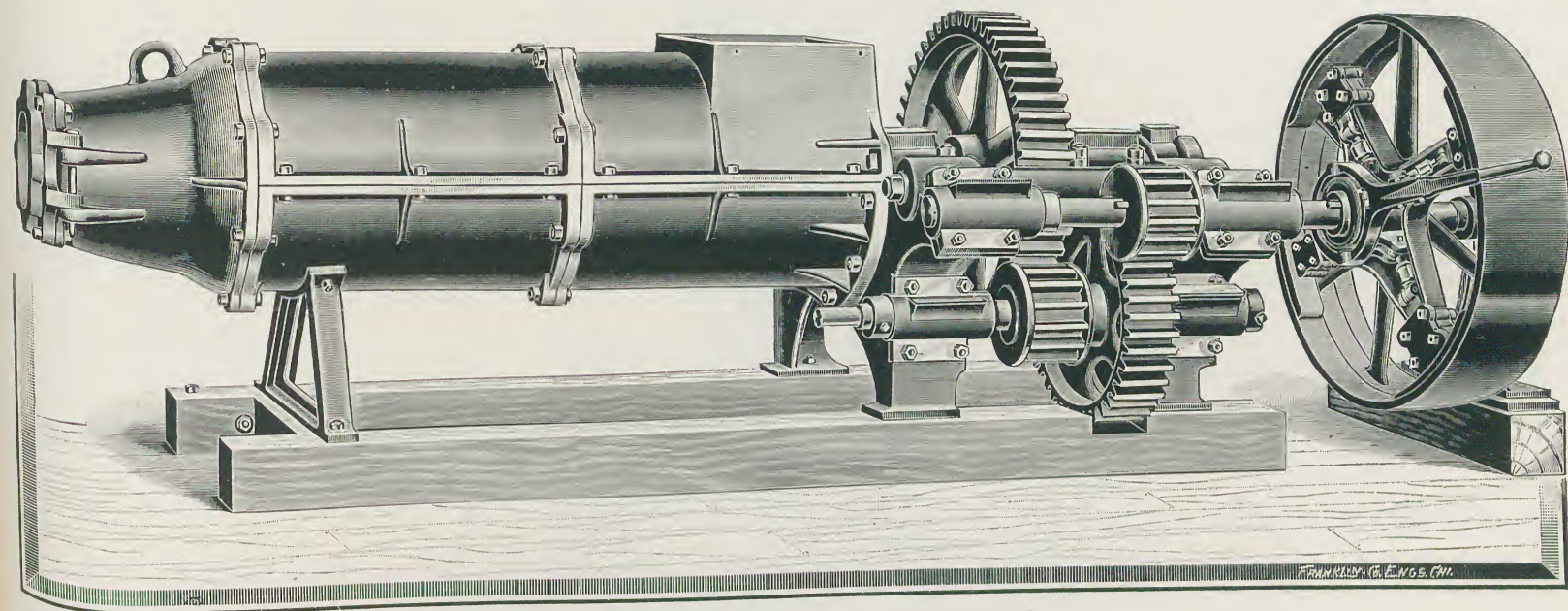
The tub is made extra heavy, and in parts, thus facilitating cleaning the machine, or removing the knives or auger. The tub is arranged with hinged front and is 6 feet long, thus giving an extra large amount of pugging capacity, and ensuring the thorough tempering of the clay.

## GEARING, PULLEYS, SPEED AND CAPACITY

The gearing is of modern design, extra heavy and strong. The pulley shaft pinion is of cast steel. The Pug-Mill is back geared 10 to 1; the pulleys are 36 inches in diameter, 8-inch face, and should make 180 to 200 revolutions per minute. The machine will prepare clay for 30,000 to 50,000 brick per day.

Height above sills .....	3' 10".
Length of sills.....	8' 6".
Total length of machine.....	12' 10".
Width of base.....	3'.
Extreme width of machine.....	6' 5".

Weight, 7,500 pounds.



No. 10 Taper Tub Pug-Mill. Style "F."

## **No. 10 TAPER TUB PUG-MILL, STYLE "F"**

This cut represents our No. 10 eight feet long Tapered Tub Pug-Mill. This machine is constructed for tempering clay under pressure.

### **SHELL AND FRAME**

The shell is made of cast iron; the side and end flanges are planed in order to make a perfect fit.

The opening in the top is 18 inches by 18 inches.

The gear frames are made extra heavy so as to give surplus strength. They are planed and fitted together nicely. Both bearings of the main shaft in the gear frames are 13½ inches long, 3½ inches diameter.

### **MIXING SHAFT AND KNIVES**

The mixing shaft is made of hammered steel 3¾ inches diameter, hexagon where the knives are fitted on.

The mixing knives are made of chill cast iron and are fitted on the shaft, and can be removed without taking the shaft out of the machine.

### **GEARING, PULLEY AND SPEED**

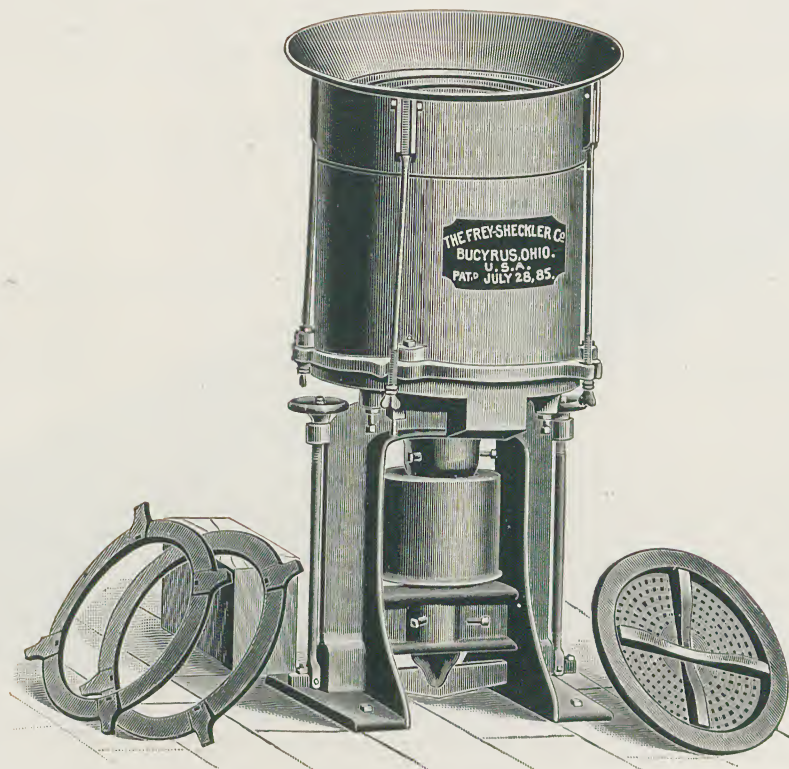
This machine is provided with strong and substantial double gearing.

The driving pulley is of our friction-clutch pattern, 42 inches diameter, 12 inch face. Speed, 150 revolutions per minute.

Capacity, 30,000 to 40,000 standard size brick per day of 10 hours, depending upon the nature of the clay.

Weight, 7,000 pounds.





12-Inch Reduction Mill.

# IMPROVED REDUCTION MILL

This cut shows our 12-Inch Reduction Mill for grinding DRY MATERIAL only. This mill has been thoroughly reconstructed and is now built by us only. It is simple in construction and easy to operate, and is superior to any similar mill on the market; grinding dry clay for fire mortar; mixing in sand or ground bats at the same operation; pulverizing dry plastic clay, and taking out all sulphur balls, or any foreign substance harder than clay.

It is the only mill for preparing clay for terra-cotta, saving the expense of washing. As a separator it is unequalled. In grinding clay it leaves stones, sulphur balls, or substances harder than clay unground in the mill to be removed after stopping.

## FOR GLASS WORKS

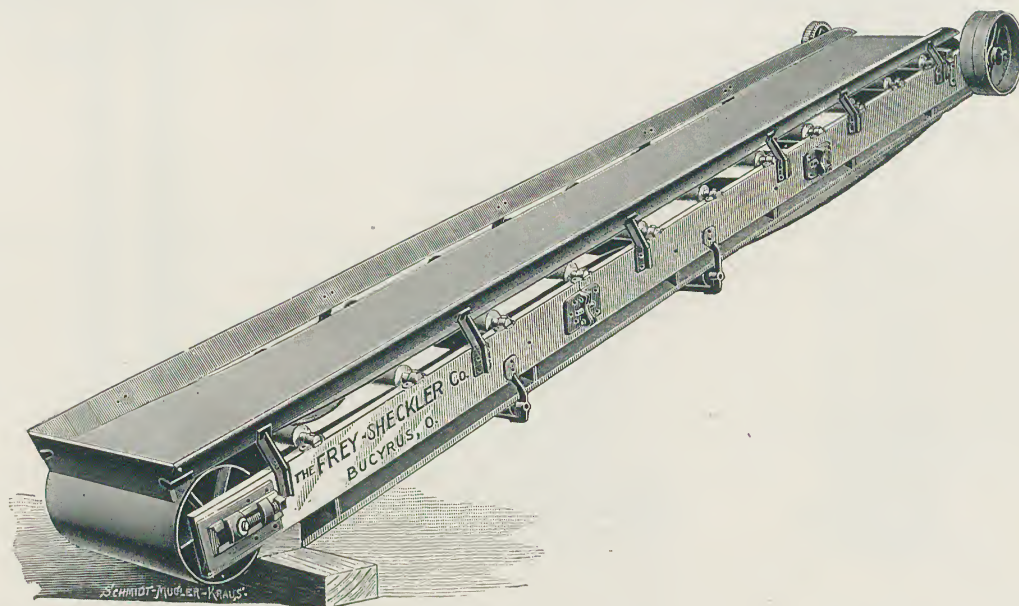
In grinding old glass pots and fire bricks, separating the fire material from the adhering glass and slag, grinding the clay, also mixing in the non-shrink material very evenly, also for regrinding plaster used for beds.

For rolling mills and blast furnaces, grinding the clay, old bats, etc., for fix and mortar. Iron or slag thrown in the mill will do no damage.

## ZINC, OXIDES, ETC.

Separating the material from the oxides. It will grind calcined clay, frank-stone, silex, pebbles, lime, sandstone, etc.

The operation of the mill is as follows: The material to be pulverized is thrown into the chamber upon the rapidly revolving plate, and its motion being communicated to the material it is rapidly and powerfully agitated. The mass of material by its own action between the particles being reduced, which as it is formed is thrown out through the openings between the rings by the centrifugal force generated by the rapidly revolving mass, a portion also escaping through the perforated bottom plate and all carried off through the spout to any desired place. The hopper is large, making it a very easy mill to feed. It may be run in either direction, with or against the sun, by a simple change in the fan wings. There is but one grinding plate to revolve, placed in perfect, self-oiling boxes, and supported by a steel step. The material to be pulverized is not confined between two plates causing undue strain, but having only its own weight to hold it in contact with the revolving plate it has no tendency to clog or run hard. The pulley supplied with this mill is 11 inches diameter, 8-inch face, and runs at 600 revolutions per minute. Every mill is tested before shipment. Weight, 800 pounds.



Rubber Apron Clay Elevator.



# RUBBER APRON CLAY ELEVATOR

This style of conveyor was constructed to meet the demand for a more durable and permanent clay carrier than heretofore obtainable, and its utility and success have been fully demonstrated by long and severe usage in leading works throughout the country. We make a variety of widths, of any length required.

The frame is of wood, strong, and rendered rigid by cross-bars and iron tie-rods.

## DRUMS

The head and foot are provided with finished cast-iron drums or pulleys. All journals are babbitted and provided with oil cups.

The foot pulley has an adjustable cleaner, which effectually prevents the accumulation of any dirt at that point.

## APRONS

The aprons consist of heavy rubber belting of best quality, sustained at intervals between the head and foot pulleys by concave rollers, the bearings for which are adjustable and provided with oil cups.

There is no point at which the edge of the apron touches the frame, consequently the wear is uniform.

## OTHER DETAILS

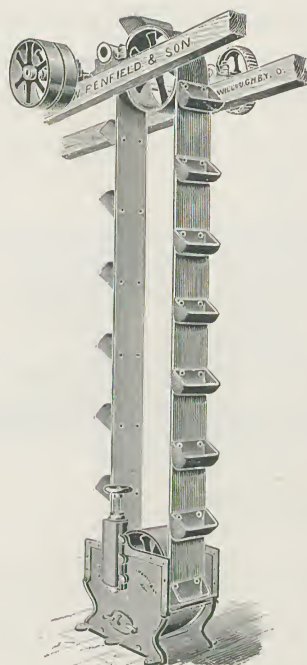
The elevators are back geared, and the larger sizes have tight and loose pulleys.

In all lengths over 18 feet the frames are made in sections, with heavy iron couplings at the joints, rendering them very easy to erect.

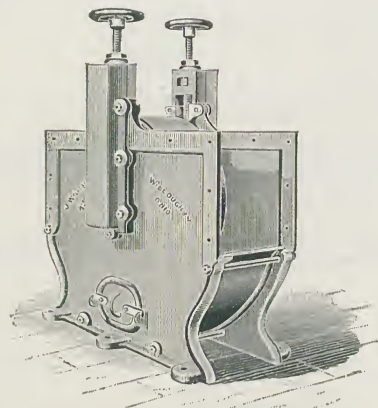
The elevators should be speeded so as to give the apron 40 to 60 feet travel per minute. They are constructed in a strictly first-class manner, and fully guaranteed to give satisfaction.



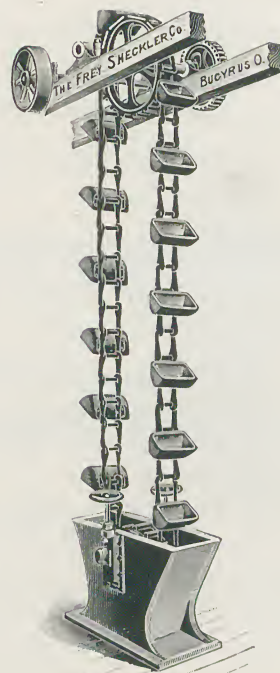
STYLE "P."  
Bucket Elevator with Link  
Chain Belting and  
Iron Boot.



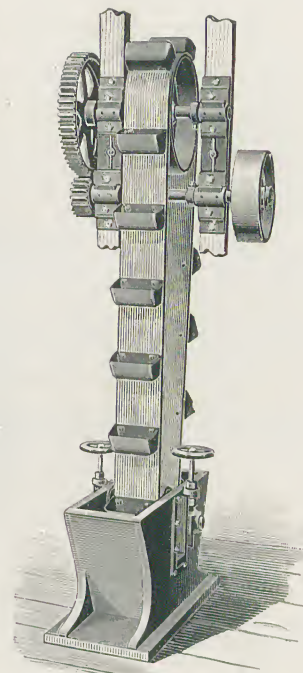
STYLE "P."  
Bucket Elevator with Rubber  
Apron and Iron Boot.



STYLE "P."  
Iron Elevator Boot.



STYLE "F."  
Bucket Elevator with Link  
Chain Belting and  
Wood Boot.



STYLE "F."  
Bucket Elevator with Rubber  
Apron and Wood Boot.

## BUCKET ELEVATORS

We are prepared to furnish Bucket Elevators of any length, and with any sized bucket required. We make two styles having, respectively rubber apron or link belt apron running over sprocket wheels, and can furnish whichever style is preferred. Where link belt and sprocket wheels are used, if the buckets are 12-inches wide or less, single strand chains are used. If wider buckets are used, a double strand elevator is desirable. Either style of elevator is provided with improved iron or wooden boot with take-up boxes. Buckets are of seamless steel.

The elevators are back geared, and are provided with tight and loose pulleys which should be speeded to give the buckets about 150 feet of travel per minute. We illustrate bucket elevators with both styles of aprons and boots and will take pleasure in naming prices upon an elevator of any size required.

In writing for estimates, state length of elevator required, kind of material to be handled, and capacity desired, as upon these details depend the width of buckets to be used and the size of chain or the thickness of rubber apron to ensure satisfactory results.

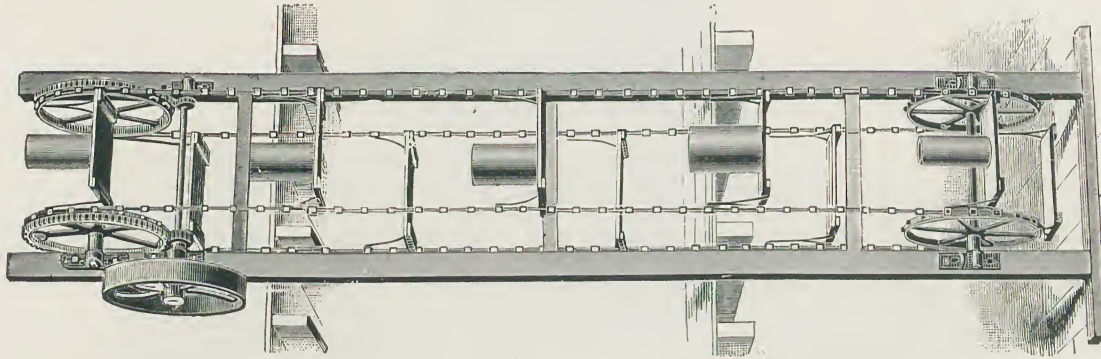
## IRON ELEVATOR BOOTS

Our Iron Elevator Boot is made with cast-iron sides, provided with suitable doors which can be readily removed in case it is desirable to clean out the boot at any time. The bottom of the boot is of flange iron, bent to a circle corresponding to the one described by the bucket in passing over the drum or sprocket wheel. This gives a decided advantage from the fact that there are no square or sharp corners in the bottom of the drum.

The boot is arranged with improved take-up bearings which are adjustable either up or down by means of hand wheels, thus ensuring even adjustment of the sprocket wheels or drum, and also serving as a tightener. The boot is constructed in a strong, substantial manner, and never fails to prove entirely satisfactory.

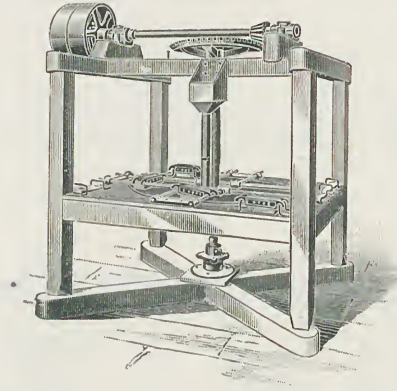


## ENDLESS CHAIN ELEVATORS



This cut represents an Endless-Chain Elevator. By means of this elevator green brick, sewer pipe and tile can be elevated to a drying-floor overhead. It does not occupy much space, and is the cheapest method that we know of to elevate clay products. It can be put into position by an ordinary carpenter, is not liable to get out of order. It will carry from 800 to 1,000 pounds with safety. The trays are hung 3 feet apart. Only iron work is furnished.

## SIZING MACHINE



This machine is used for grinding off brick at any desired angle, forming key, wedge, or arch brick.

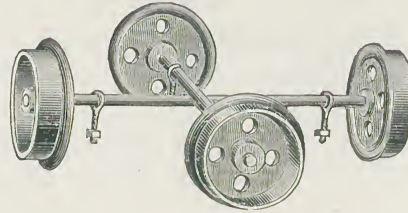
The brick are held in clamps fitting upon the horizontal guide rods, and the grinding done by sand and water in connection with the circular grinding plate.

The grinding discs are made heavy to allow for turning off in refacing.

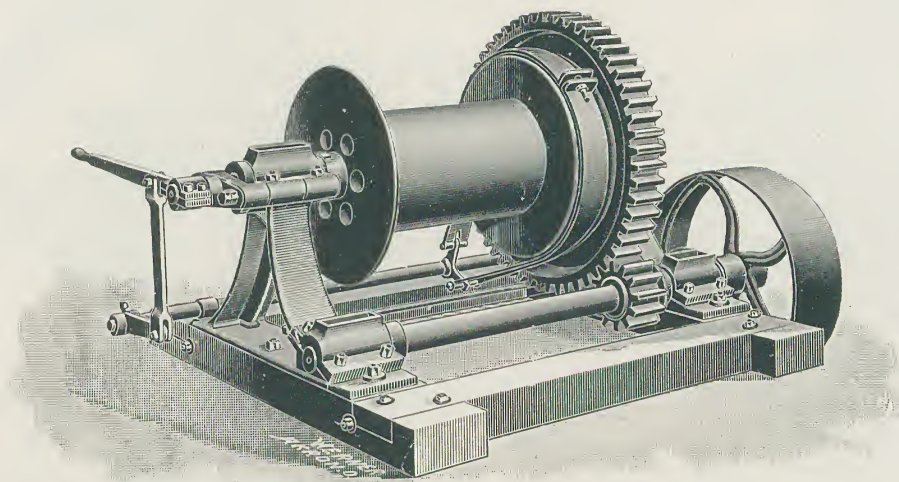
The machine is especially adapted for dry press brick works, or where there is a demand for a limited number of wedge, key, or arch brick.

Weight, 3,100 pounds.

## TRUCK WHEELS AND AXLES



We furnish two sizes of truck wheels, 11 and 9 inch, including axles for any width of track.



Gear and Friction Winding Drum. Style "F."



# GEAR AND FRICTION WINDING DRUMS, STYLE "F"

The illustration on opposite page shows our Gear and Friction Winding Drum, which we make in two sizes, to wit, Nos. 3 and 4. The construction throughout is strong, simple and durable. It is not liable to breakage or derangement, and is mounted on a solid white oak frame. The drum runs loose on the shaft and engages itself with the wood friction (which is securely bolted to the large spur gear) by being forced along the shaft by means of the lever.

## MODE OF OPERATION

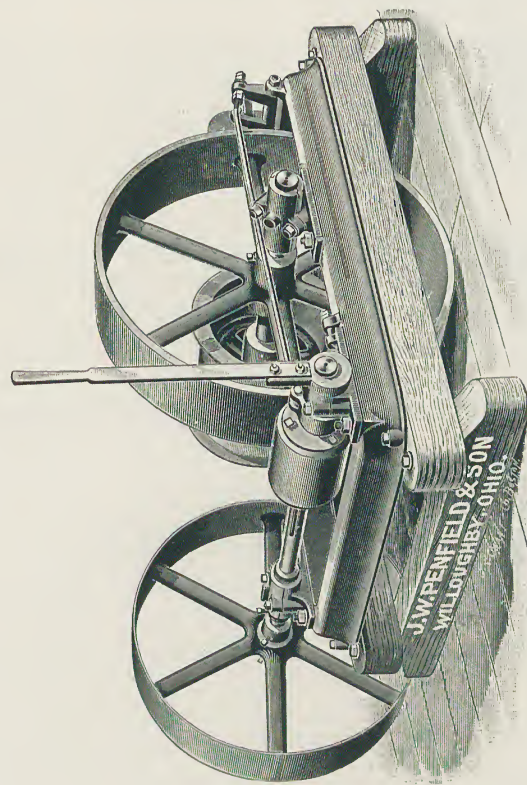
This lever is connected by a rod with the band brake lever, so that both the friction and the brake levers are operated by one movement. Thus with the levers in a central position, as shown in the engraving, the drum is left free to revolve on the shaft. When the levers are forced down, the brake is applied, and holds the drum or lowers the load as desired. When the levers are raised, the drum is brought into contact with the friction disc and raises the load, then the brake is released. This brings it fully under the control of the operator.

## SIZES AND CAPACITY

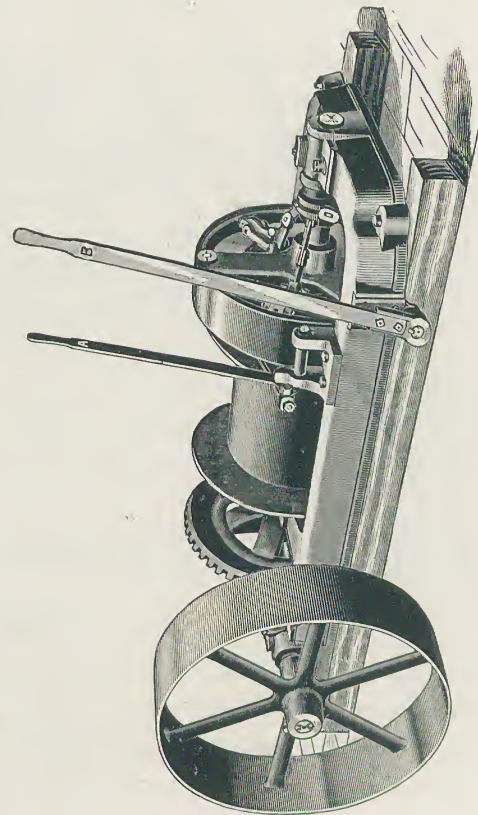
No 3 drum is 12 inches in diameter and 24 inches long inside of the flanges, which are 5 inches high all around. The driving pulley is 24 inches diameter, 8-inch face. Speed, 550 revolutions per minute; geared  $4\frac{1}{2}$  to 1. This drum will hold 1,300 feet of  $\frac{5}{8}$ -inch cable. Weight of drum without cable, 1,725 pounds.

No. 4 drum is 24 inches in diameter and 30 inches long inside of flanges, which are 5 inches high all around. Geared 5 to 1. Diameter of main shaft  $3\frac{1}{2}$  inches, diameter of pulley shaft  $2\frac{3}{4}$  inches. Speed, 350 revolutions per minute. Driving pulley is 24 inches diameter, 8-inch face. This drum will hold 2,800 feet  $\frac{5}{8}$ -inch cable. Weight of drum, without cable, 3,500 pounds. Floor space required, 6 feet 7 inches by 5 feet 8 inches.

The speed of the above drums was based upon the supposition that the dump-car travels six miles per hour.



No. 1 Winding Drum or Hoist. Style "P."



The No. 3 Friction Hoist. Style "P."

## NO. 1 WINDING DRUM OR HOIST, STYLE "P"

The base is heavy and cast in one piece. The machine is arranged so that one lever controls both the friction device and the brake. The small friction wheel is made of paper, is 9 inches in diameter, 10-inch face, and has iron binding rims on the outside. The large friction pulley is cast iron, 40 inches in diameter and 10-inch face. The winding drum is 18 inches in diameter and 18 inches long inside of flanges, which are  $2\frac{1}{2}$  inches high all around. Drive pulley is 42 inches in diameter, 10-inch face. Weight, 1,600 pounds.

## NO. 2 WINDING DRUM OR HOIST, STYLE "P"

### BEVEL GEARED

This machine is designed for use where the track runs parallel to the line shafting.

It is constructed in substantially the same manner as the No. 1 Winding Drum, except that it is provided with bevel gearing, so that the driving pulley revolves at right angles to the drum. Weight, 1,900 pounds.

## NO. 3 FRICTION HOIST, STYLE "P"

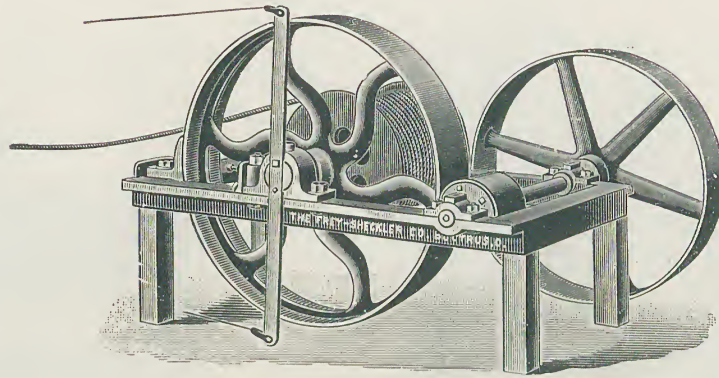
### BEVEL GEARED

This machine is extra large and powerful. The drum is 18 inches in diameter and 23 inches wide between the flanges. The flanges are 6 inches high. The drum will hold 1,400 feet of  $\frac{5}{8}$ -inch wire cable.

The drum is operated by means of a 32-inch imperial friction-clutch cut-off coupling. The drum is provided with a band brake lined with hard maple blocks. The driving pulley is 42 inches in diameter, 10-inch face, and should make about 125 revolutions per minute. The lever A controls the band brake, and the lever B operates the clutch. The weight of the drum without cable is 3,760 pounds.



# FRICION WINDING DRUM, STYLE "F"



This illustration represents our Friction Winding Drum, which we make in three sizes, to wit, Nos. 1, 2 and 5. A machine of this kind is one of the essentials of a well-equipped brick factory for the transportation of clay from the pit to the factory. This drum is substantially built. The frame is heavy, and is so constructed that it can be bolted to the upper part of the track timber.

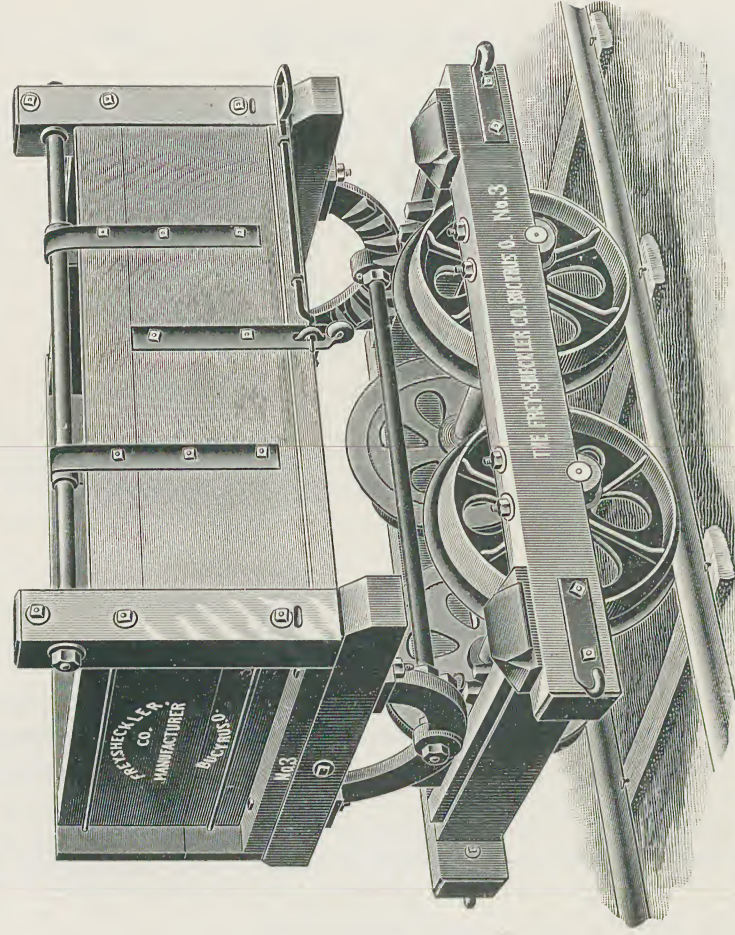
## SPECIFICATIONS OF DRUM

No. 1 Drum has a friction pulley 40 inches diameter and 7-inch face. The paper friction pulley is 8 inches diameter and 7-inch face. The driving pulley is 24 inches diameter and 6-inch face. Speed, 500 revolutions per minute, geared 5 to 1; weight of drum without cable, 1,400 pounds. Drum will hold 800 feet  $\frac{5}{8}$ -inch iron cable.

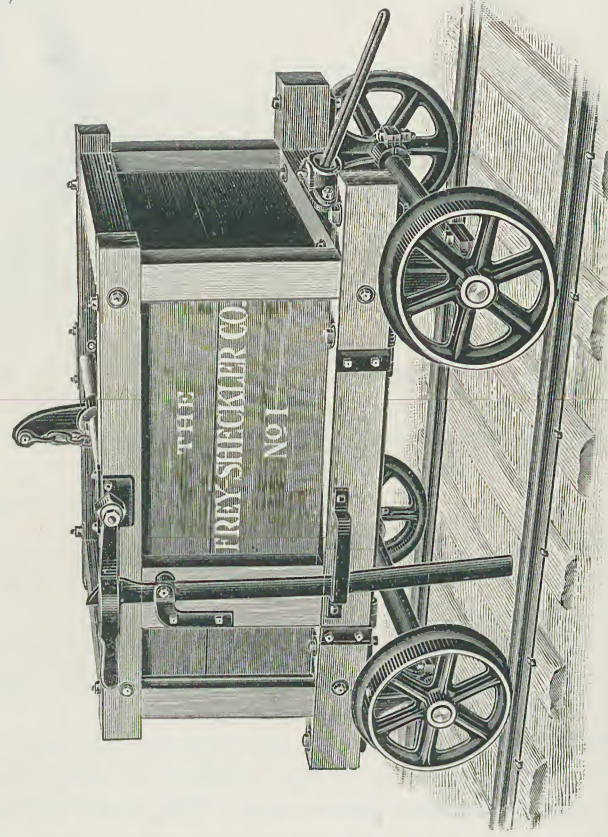
No. 2 Drum has a friction pulley 30 inches diameter and 6-inch face. The paper friction pulley is 6 inches diameter and 6-inch face. The driving pulley is 26 inches in diameter and 6-inch face. Speed, 500 revolutions per minute; geared 5 to 1, weight of drum without cable, 900 pounds. Drum will hold 300 feet  $\frac{5}{8}$ -inch iron cable.

No. 5 Drum is 24 inches diameter and 36 inches long inside of flanges, which are 5 inches high all around. Diameter of main shaft,  $3\frac{1}{2}$  inches; diameter of pulley shaft,  $2\frac{3}{4}$  inches. Speed, 350 revolutions per minute; geared 5 to 1. Driving pulley is 24 inches diameter, 10-inch face. This drum will hold 3,400 feet of  $\frac{5}{8}$ -inch cable. Weight of drum without cable, 4,500 pounds. Floor space required, 7 feet by 5 feet 9 inches.

The speed of the above drums was based upon the supposition that the dump car travels six miles per hour.



Side Dumping Clay Car. Style "F."



Bottom Dumping Clay Car. Style "F."



## SIDE DUMPING CLAY CAR, STYLE "F"

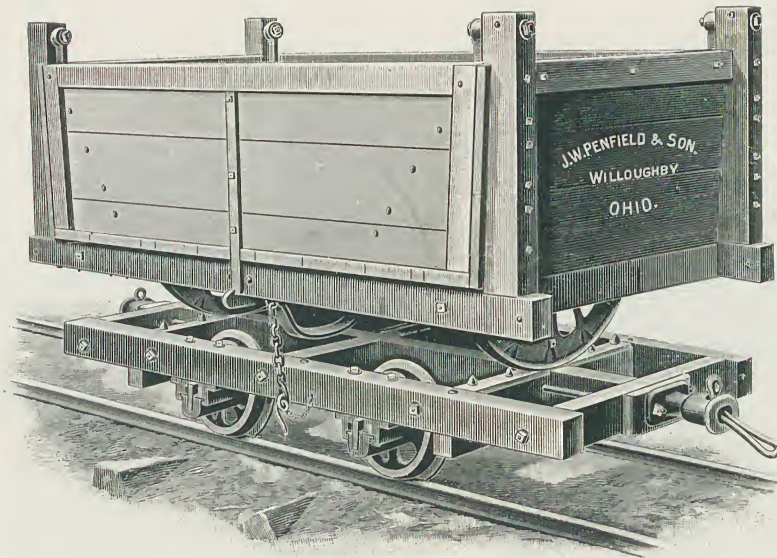
The cut on opposite page gives a fair representation of our Side Dumping Car. This car is substantially constructed in all parts; it is made to dump on one side only, but can furnish it to dump on both sides if desired. The side is hinged from the top and arranged so that when the car is tilted over, the catch holding the car in position is released, allowing the side to swing out at the bottom. The wheels, 17 inches in diameter, are very heavy, chilled and annealed. This car is made in three sizes. No. 3, capacity  $\frac{3}{4}$  cubic yard; track gauge, 36 inches; No. 4, 1 cubic yard; track gauge, 36 inches; No. 5,  $1\frac{1}{2}$  cubic yards; track gauge, 42 inches.

Weight No. 3 Car, 900 pounds; weight No. 4 Car, 1,600 pounds; weight No. 5 Car, 1,700 pounds.

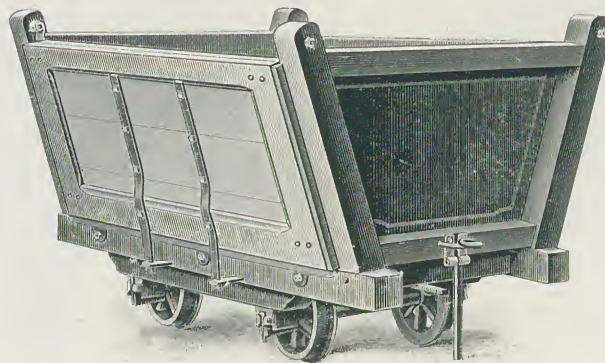
## BOTTOM DUMPING CLAY CAR, STYLE "F"

This car is remarkably strong. The timbers are heavy and securely bolted together; the wheels, 17 inches diameter, are thoroughly chilled and annealed, and the workmanship throughout equal to the highest established standard. This car is arranged to dump automatically. The bottom is in two parts and hinged at the sides of the box and held in position by two chains which are attached to an arm keyed to a steel cross-shaft which has a lever on the outside of the car, which is held in position by a catch that hangs down between the wheels near the track. A stop fastened to the track releases this catch and lets the bottom drop when the car runs back, and the diggers, by a pull of the lever, again place the bottom in position. We make two sizes of this style of car. No. 1, capacity  $\frac{3}{4}$  cubic yard, track gauge 42 inches; No. 2, capacity 1 cubic yard, track gauge 42 inches. Weight No. 1 Car, 1,255 pounds; weight No. 2 Car, 1,755 pounds.





No. 1 Clay Car. Style "P."



No. 2 Clay Car. Style "P."

## No. 1 CLAY CAR, SIDE DUMP, STYLE "P"

This Car is made of good, heavy timbers, securely bolted together, and is arranged to dump on either side. The sides are hinged from the top, and so arranged that when the Car is tilted over, the catch holding the Car in position is disengaged, allowing the side to swing out at the bottom, thus automatically emptying the Car. The catch holding the Car re-engages as the Car is tipped back into position. Each side of the Car is provided with suitable chain and staple to hold the Car from tipping over while being loaded. The Car is also provided with suitable couplers at each end, so that any number of cars can be hauled at the same time. The journals for the axles are composed of two parts, the upper half attaching to the frame of Car, and the lower half sliding into the upper half with tongue and groove, and being fastened by a key. The wheels are heavy, 14 inches in diameter, and arranged to run on a track having a gauge of  $23\frac{1}{2}$  inches. Inside dimensions of box are as follows: Length, 6 feet 3 inches; width, 3 feet 8 inches; depth 22 inches. The Car will hold two yards of clay. Weight, 1,700 pounds.

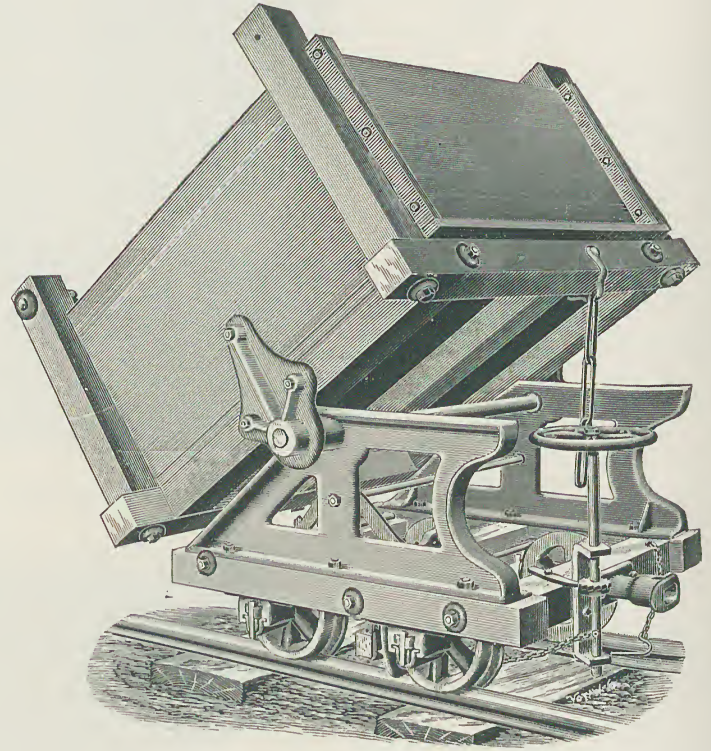
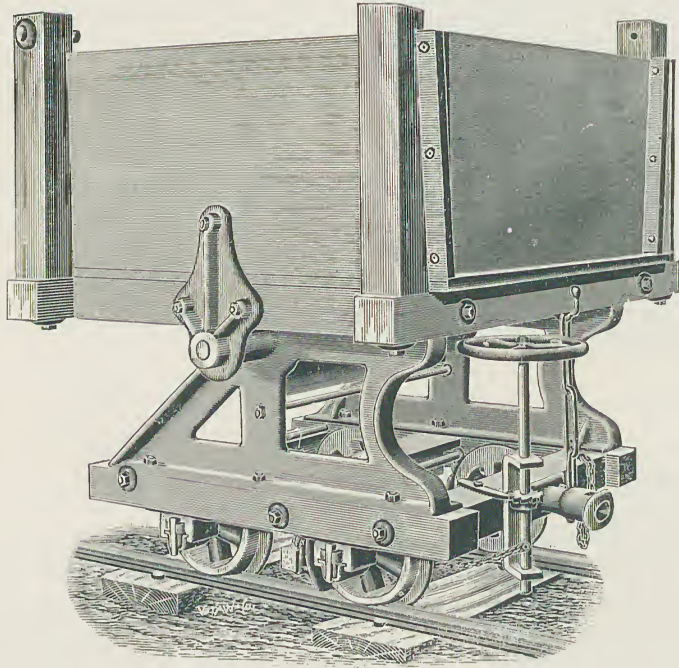
## No. 2 CLAY CAR, AUTOMATIC DUMP, STYLE "P"

This Car is built in a heavy, substantial manner, and dumps on both sides at once. The sides are hinged at the top, and held in position by suitable catches. The track, at the place where the load is to be dumped, is arranged with a projection, against which the bar in front of the Car strikes. This pushes the horizontal bar back of it, releasing the catches, and allowing the sides to swing out, dumping the load automatically, one-half on each side.

The wheels are heavy, 14 inches in diameter. The Car can be arranged to run on a track of any gauge. The Car will hold  $1\frac{1}{2}$  cubic yards of clay. Weight, 1,600 pounds.



## No. 3 END-DUMPING CLAY CAR, STYLE "P"



The No. 3 End-Dumping Clay Car is constructed in a very substantial manner, and is especially well suited for the severe usage received by cars of this kind in the average brick-making plant.

The Car is provided with a strong brake, also with a suitable chain and staple to keep the box of the Car from tipping over while being loaded. It is also provided with suitable couplers at each end, so that any number of cars can be hauled at the same time. Weight, 1,600 pounds.





Bucyrus Steam Tunnel Dryer.

# THE BUCYRUS STEAM TUNNEL DRYER.

We can remove more moisture with less fuel than any other Dryer. The operator has perfect control of heat in each tunnel; can maintain low heat in one and high in another; can empty one tunnel without interfering with or admitting cold air into the others; can use one tunnel, many, or all tunnels, as desired; instead of feeding circulation by the admission of cold, moist air from the exterior, the hot, dry air is drawn from the "attic" of the dryer, thereby hastening drying and saving fuel. The cost of construction and operation is less than any other.

We have reached our present approved form of construction by long continued and scientific tests.

We earnestly urge our friends to consider its merits and write us.

## THE CONSTRUCTION OF BUILDING

The building is constructed of brick, the exterior walls being eight inches thick; the interior walls four inches thick. The height of the walls is determined by the size and character of the product to be dried.

Directly above the walls are placed two thicknesses of one-inch boards, lap-jointed, closely laid, and over this is placed twelve inches of common earth for the purpose of retaining the heat within the tunnels.

The weather roof may be constructed of tar, pitch and gravel; iron, shingles, or any other material that will shed water.

At proper intervals in the walls are placed the warm-air ducts, which are used for conveying the warm air from the space above earth-filling and underneath roof, where the earth is both warm and quite free from moisture both summer and winter. The ducts are arranged so as to discharge the warm air directly underneath the steam radiating pipes, which are constantly supplied with steam at a high pressure. The air coming in contact with the radiators, and, becoming highly heated, rises up through and between the brick or other clay goods, gathering moisture from the same in its ascent, thence passes out through vapor stacks directly into the outer atmosphere. In each of the vapor stacks is placed a damper for regulating the draft and creating a thorough circulation among the brick.

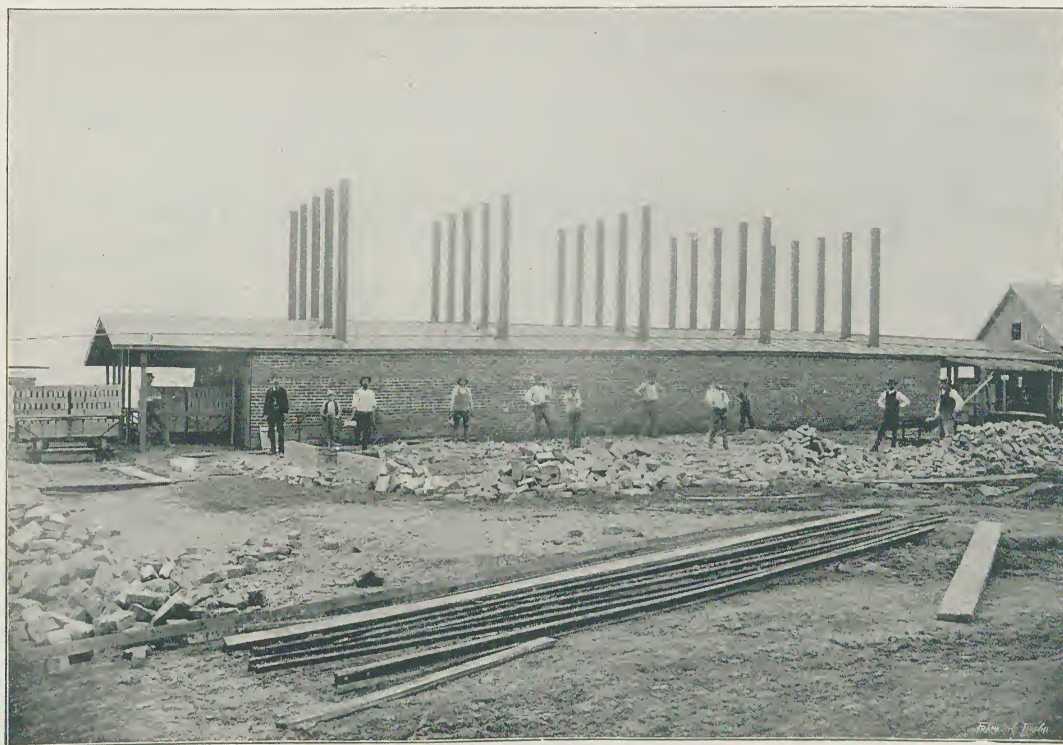
## THE HEATING SYSTEM

The heating system is composed of one-inch pipes extending the entire length of the tunnels, and connecting at both ends with cast-iron manifolds.

The pipes are arranged in longitudinal series underneath the track, between the rails, in the best possible position for conveying heat to drive off the moisture from the brick on the cars. As will be fully understood, every pipe in each of the sections of radiators is perfectly accessible at all times for observation or repair, without disturbing any other section or pipe, and without getting underneath track, close to a nest of hot pipe. This point will be thoroughly appreciated by any one at all conversant with radiators. Each of the radiating sections is supplied with separate and independent drip-pipes for carrying off the product of condensation, which is forced by pressure to a receiving tank, placed adjacent to the boilers, from which tank it flows by gravity to a steam pump, thence forced into boilers, still at nearly boiling heat, thereby saving fuel, and at the same time furnishing strictly pure water.

Each tunnel is supplied with its own valves so that it is perfectly under the control of the operator, whereby each tunnel can be worked independently or in connection with the others.

Our system is undoubtedly the most practical and economical method of converting fuel into hot air, for the drying of brick made by either the stiff-mud, soft mud, or dry-press processes; likewise hollow blocks, fire-proofing, and porous terra-cotta. A large volume of air, heated by steam radiators, is recognized by the highest authorities as being the best known medium of extracting moisture from clay. This has been demonstrated by all those using the BUCYRUS STEAM TUNNEL DRYER.



BUCYRUS STEAM TUNNEL DRYER.



## SUGGESTIONS TO CORRESPONDENTS

In making inquiries relative to our Dryer, please give us the following information.

State the class of machine used, whether soft-mud or dry-press.

The nature of clay, whether fire-clay, shale clay, porous clay or plastic clay.

The kind of product to be manufactured.

Quantity to be made daily.

Also give the size of the product to be dried, and, if possible, the amount of water it contains; also whether it cracks easily when subjected to the sun or wind.

Your replies to the above questions will enable us to give you an accurate estimate and a full and satisfactory answer.

## DRY CARS

We manufacture our own cars, and guarantee the quality of material and workmanship.

The frames are strong and substantially built.

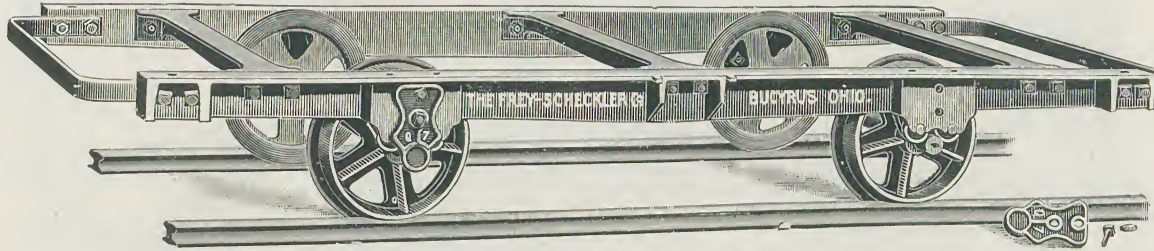
The journals are of the roller-bearing type, as can be seen in the cut, and are far superior to the kind used by other manufacturers, obviating their defects and absolutely reducing friction to a minimum, thus producing an easy running car, and prolonging the life of same beyond the usual limit. No oiling required.

The material and workmanship in the construction of our cars are of the very highest grade obtainable.

The wheels are pressed on to the axles by hydraulic pressure, and are evenly gauged and nicely balanced.

The cars are thoroughly braced, so as to withstand all transverse strains, and will not go to pieces when subjected to hard and continued usage.

## NO. 1 SINGLE DECK CAR



This cut represents our No. 1 Single Deck Car. It is constructed on the same general plan as our No. 2, except without the upper deck. It is designed for carrying brick on foot pallets. This Car can at any time be converted into a double deck car, like our No. 2, by adding the posts, angle iron deck-frame and braces.

Length of car over all, 7 feet 3 inches.

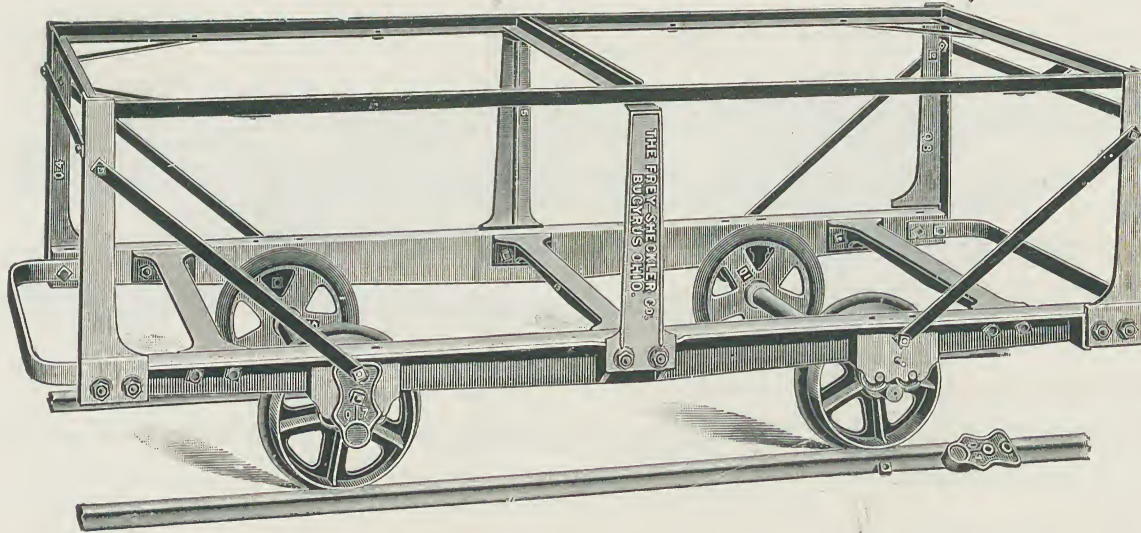
Width of frame over all,  $35\frac{3}{4}$  inches.

Distance from center to center of wheels, 3 feet 6 inches.

Wheels,  $10\frac{1}{2}$  inches diameter, 2-inch tread.

Gauge, 25 inches between track rails; weight, 320 pounds.

## No. 2 DRY CAR



This car is designed for carrying all varieties of stiff-mud brick, being supplied with a double deck, equipped with angle iron upper deck frame, and as a binder for the wood slats.

Length over all, 7 feet 3 inches.

Width of frame over all,  $35\frac{3}{4}$  inches.

Distance from center to center of wheels, 3 feet 6 inches.

Wheels,  $10\frac{1}{2}$  inches diameter, 2-inch tread.

Height from top of side frame to under side of top deck, 17 inches.

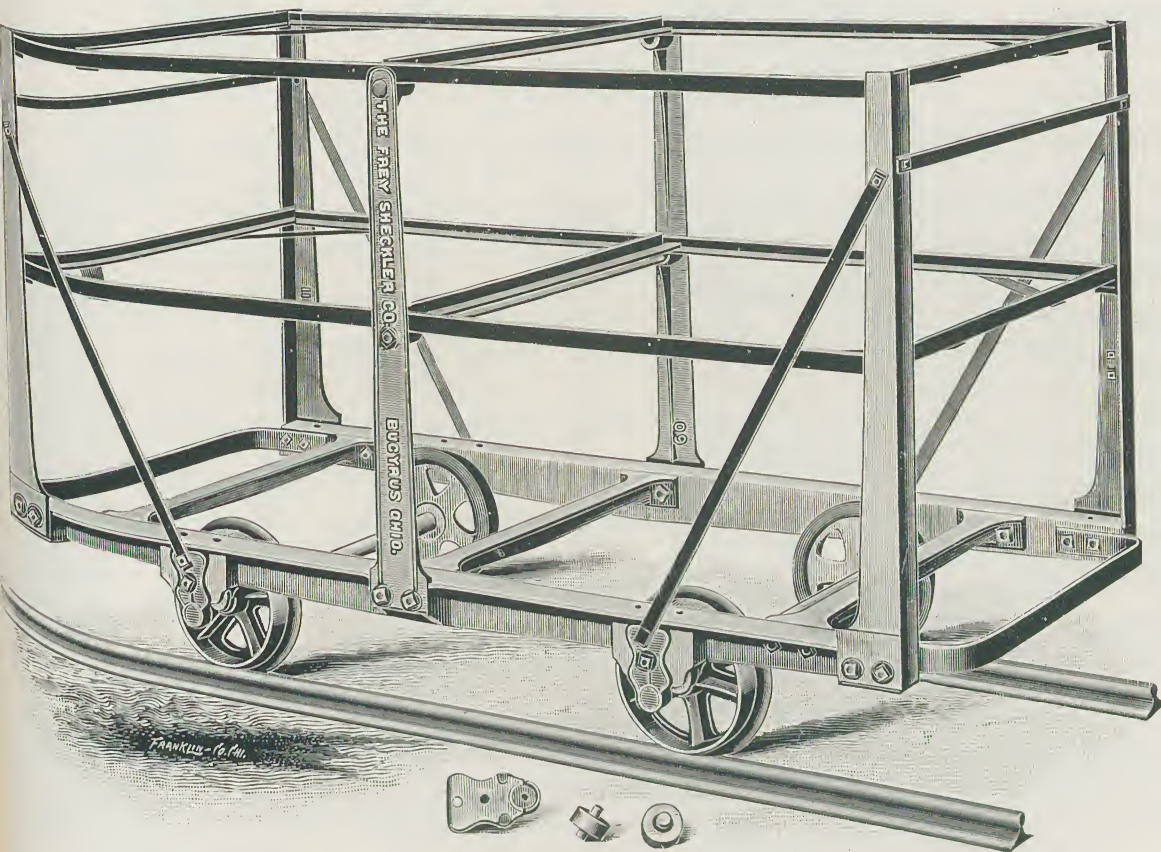
Size of angle iron for upper deck,  $1\frac{1}{4}$  inches x  $1\frac{1}{4}$  inches x  $\frac{3}{16}$  inches.

Gauge, 25 inches between track rails; weight, 425 pounds.

Capacity, 500 brick.



## No. 9 TRIPLE DECK CAR



This cut represents our No. 9 Triple Deck Car.

This car is designed for the drying of hollow ware and fire proofing.

Length of car over all, 7 feet 3 inches.

Width of car over all,  $35\frac{3}{4}$  inches.

Distance from center to center of wheels, 3 feet 6 inches.

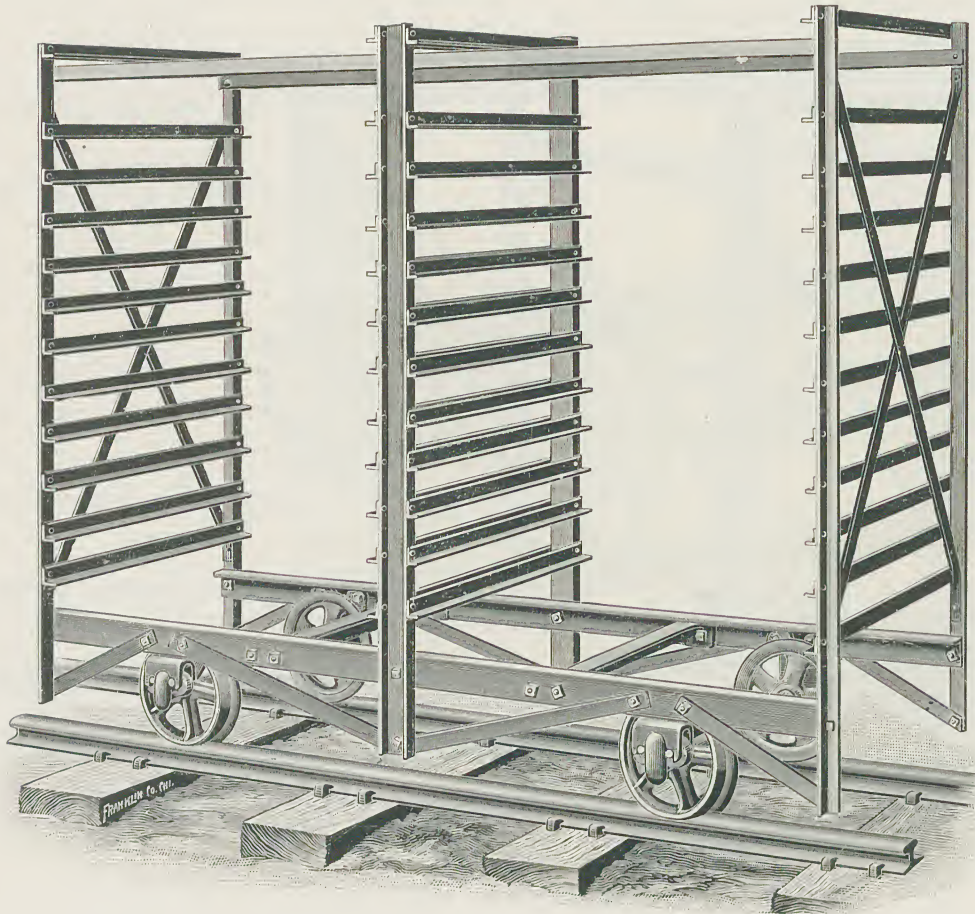
Wheels,  $10\frac{1}{2}$  inches diameter, 2 inches tread.

Height in the clear between decks,  $17\frac{1}{2}$  inches.

Height over all, from track level to top of third deck, 47 inches.

Gauge, 25 inches between track rails; weight, 565 pounds.

## No. 3 RACK CAR



This cut represents our No. 3 Rack Car for drying soft-mud brick on pallets, on the flat.

The frame and racks are made of steel.

The car is made so as to accommodate 6 brick to each pallet, three pallets wide; twelve pallets high.

The uprights are arranged for pallets 34 inches long, but can be made for any length pallet desired.

The distance from top to top of pallets is  $4\frac{3}{4}$  inches.

The extreme length of car, 6 feet 9 inches; width, 36 inches.

The wheels are  $10\frac{1}{2}$  inches diameter, 2-inch tread.

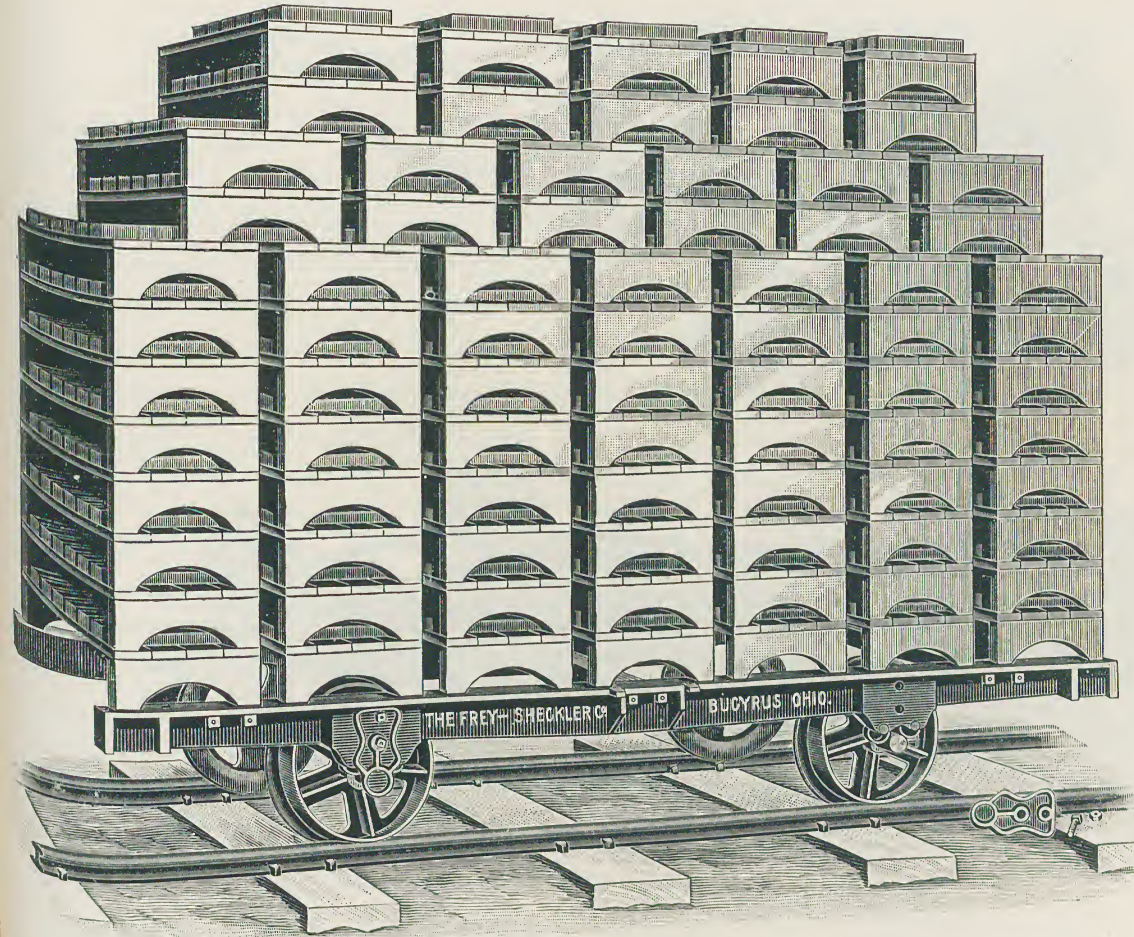
Gauge, 25 inches between track rails.

Capacity, 432 green brick.

Weight, 550 pounds.



## No. 4 SINGLE DECK DRY CAR



This cut shows our No. 4 Single Deck Dry Car, which is used in connection with wooden pallets for the drying of soft-mud brick, on the flat. This car will hold 78 pallets or 468 soft-mud brick.

With this arrangement the drying is thorough, rapid and uniform.

Length of car over all, 6 feet 8 inches.

Width of frame over all,  $35\frac{3}{4}$  inches.

Distance from center to center of wheels, 3 feet 6 inches.

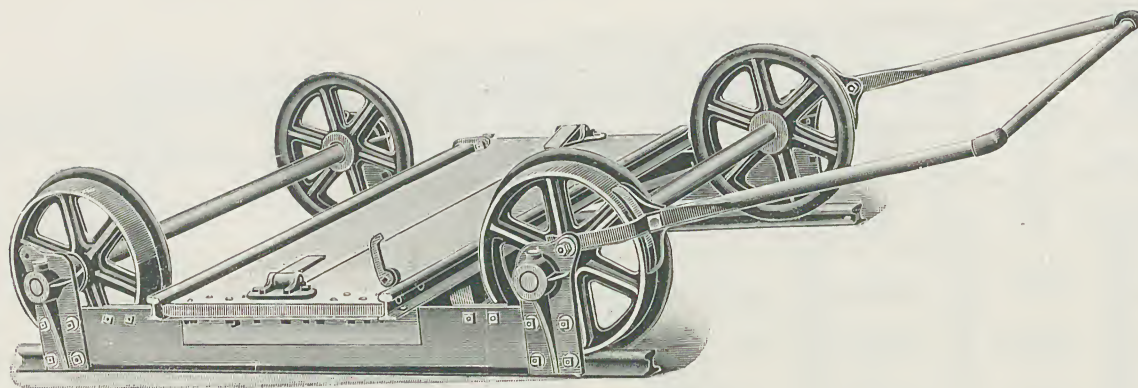
Wheels,  $10\frac{1}{2}$  inches diameter, 2-inch tread.

Height of car from track level,  $10\frac{3}{4}$  inches.

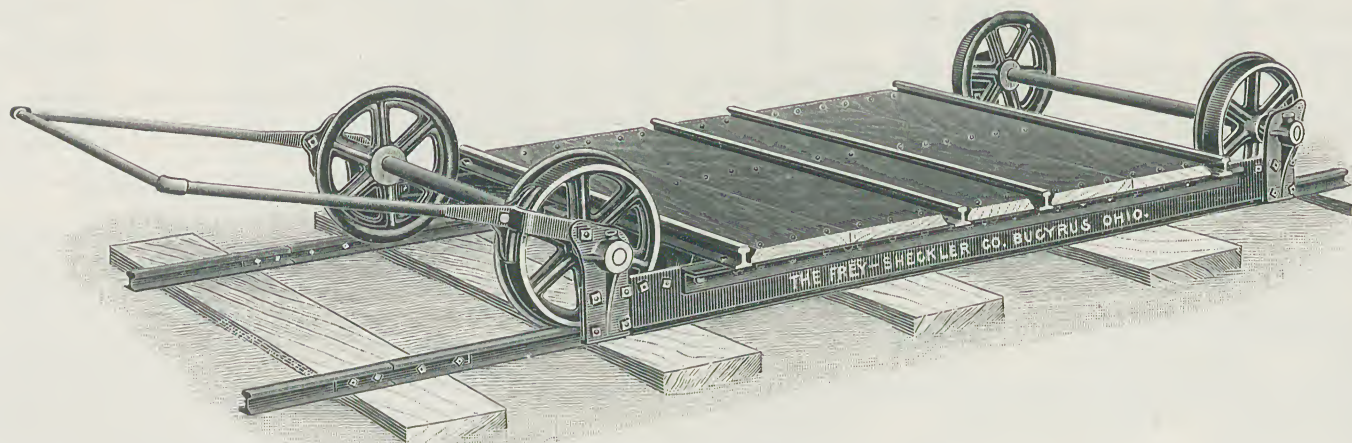
Gauge, 25 inches between track rails.

Weight, 310 pounds.





No. 5 Transfer Car.



No. 6 Transfer Car.

## No. 5 TRANSFER CAR

Cut on opposite page illustrates our improved pattern Transfer Car, which is supplied with a brake and handle so that it is always placed under the immediate control of the operator.

Length over all, not including handle, 6 feet 3 inches.

Length over all, including handle, 8 feet 11 inches.

Width over all, 5 feet 6 inches.

Distance from center to center of wheels, 4 feet 8 inches.

The wheels are made of chilled iron, 17 inches diameter  $2\frac{1}{2}$ -inch tread.

Track gauge, 4 feet ; weight, 885 pounds.

## No. 6 TRANSFER CAR

We show herewith a cut of our No. 6 Double Transfer Car, which is supplied with a brake and handle, so as to bring the car under the immediate control of the operator.

Length over all, not including handle, 10 feet 3 inches.

Length over all, including handle, 13 feet 3 inches.

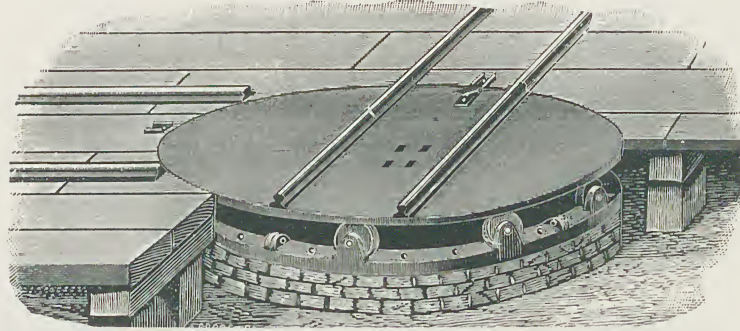
Width over all, 5 feet 6 inches.

Distance from center to center of wheels, 8 feet 6 inches.

Height of wheels, 17 inches ; tread,  $2\frac{1}{2}$  inches.

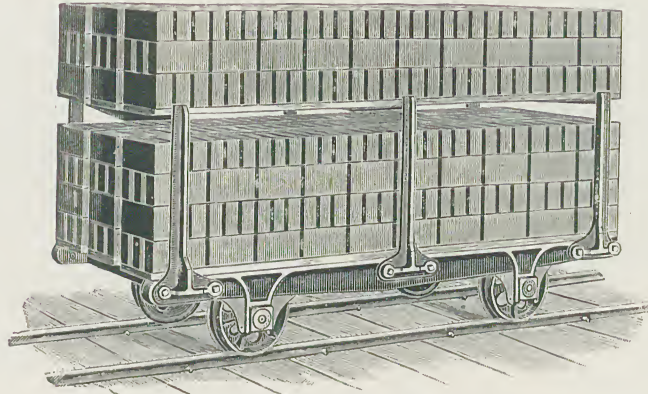
Track gauge, 4 feet ; weight, 1,150 pounds.

## TURN-TABLES



This cut shows our Improved Turn-Table, which is made of one solid piece of iron. The disk plate works perfectly on a pivot center bearing, and is further supported by, and revolves upon 8 outer wheels.

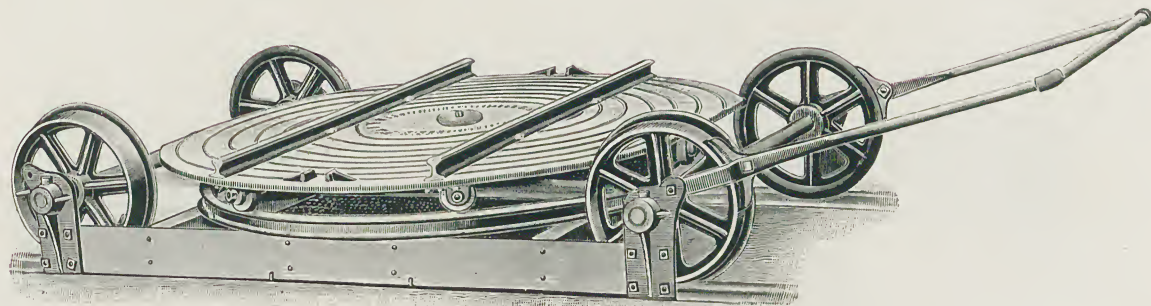
We manufacture this turn-table in two sizes, viz.: 5 feet diameter, weight 675 pounds; 6 feet diameter, weight 800 pounds.



Loaded Double-Deck Dryer Car.



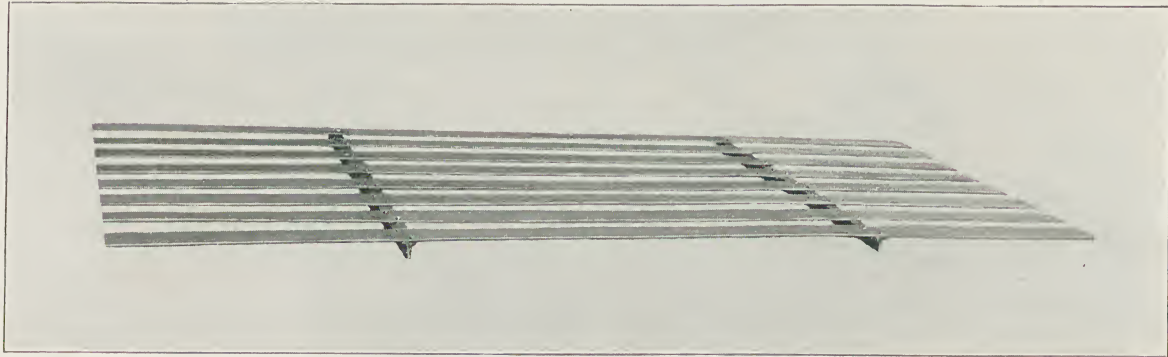
## COMBINED TRANSFER CAR AND TURN-TABLE



This cut shows our No. 5 Transfer Car and 6-foot diameter Turn-Table combined, which is used both for transferring and turning the dry cars. This style of car has been found very desirable in many cases.

Weight of Car and Turn-Table combined, 1,650 pounds.

## STEEL DECKS.



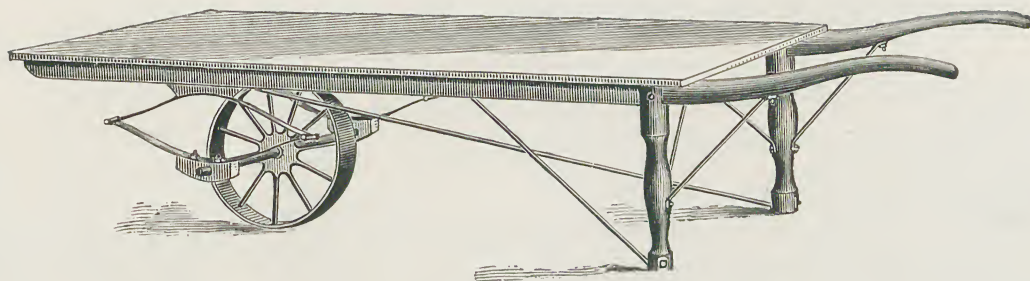
The deck herewith shown is made to fit our Standard No. 1 and No. 2 Dry Cars. It is made with flat steel, riveted to "T" iron.

The length of deck, from out to out, is 7 feet.

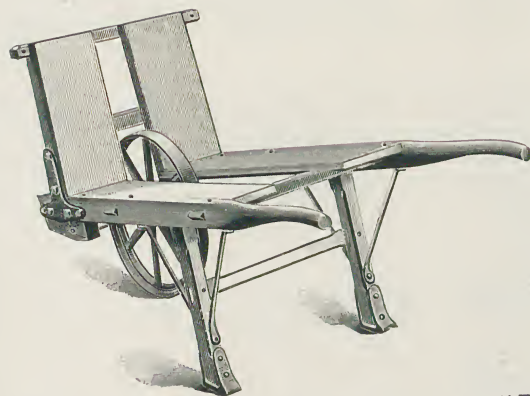
Width of deck, from out to out, is 2 feet 11 1/2 inches.

The deck has eight slats, each 2 3/4 inches wide.

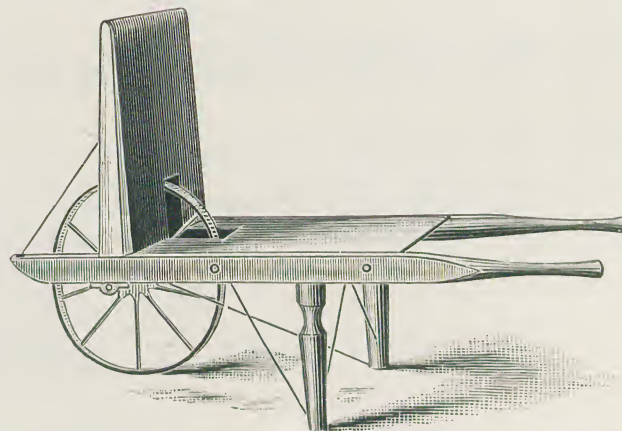
Weight, 120 pounds.



No. 1 Platform Spring Barrow. Style "P."



No. 2 Common Brick Barrow. Style "P."



No. 3 Common Brick Barrow. Style "P."



## No. 1 PLATFORM SPRING BARROW, STYLE "P"

These barrows are used in off-bearing brick from the brick machine, and in wheeling face brick into the kiln.

The framework is of hard wood, securely bolted together and rigidly braced, and the construction is strong and substantial throughout. The barrow is provided with the best steel springs.

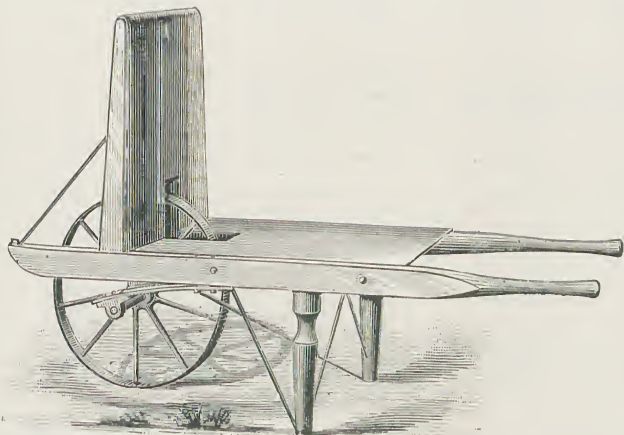
The barrows are made single or double wheeled as preferred. We regularly furnish them with one wheel, as the load carries more easily and the barrow can be run on a single plank runway. The barrows hold 64 brick, and, as the load is evenly balanced, are handled as easily as an ordinary two-wheeled barrow with half as many brick, thus making a saving of time and help.

## No. 2 COMMON BRICK BARROW, STYLE "P"

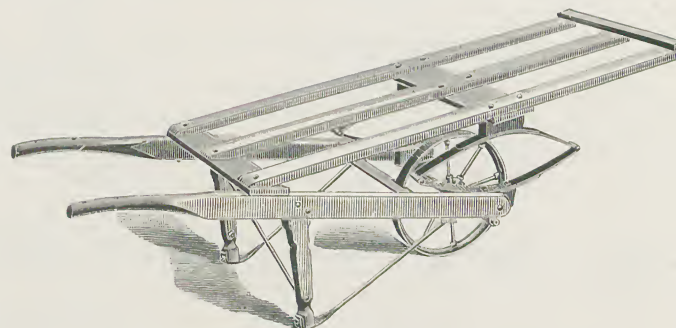
The common brick barrows are used in moving brick to and from the kilns. The No. 2 Barrow is extra heavy, and well adapted for the heavy work it has to perform. The frame is of the best oak, securely ironed and braced. Load, from 80 to 100 brick. The wheel is extra heavy and set well under the barrow, throwing the load as much as possible on the balance and making it wheel easier. The barrow feet are iron shod.

## No. 3 COMMON BRICK BARROW, STYLE "P"

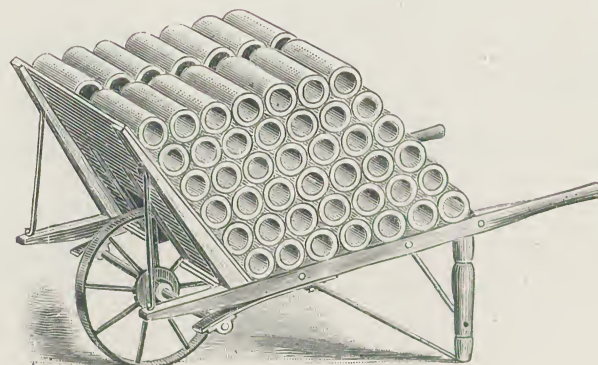
This is a strong, durable barrow, made of the best of oak and securely ironed and braced.



No. 4 Barrow for Pressed Brick. Style "P."



No. 5 Platform Spring Mold Truck. Style "P."



No. 6 Tile Barrow. Style "P."

## No. 4 BARROW FOR PRESS BRICK, STYLE "P"

This is substantially the No. 3 Barrow with springs added. By means of the springs, brick can be handled with little or no liability of chipping, and, from the saving on this score alone, the barrow will prove a profitable investment. The springs used are the best three-leaf steel spring and will last for years.

## No. 5 PLATFORM SPRING MOLD TRUCK, STYLE "P"

(FOR PALLET BRICK)

This truck is suitable for handling green brick in molds or on pallets. It is made of seasoned hard wood, securely ironed and braced, and is first class in every way. It is made single or double wheeled as desired.

## No. 6 DRY TILE BARROW, STYLE "P"

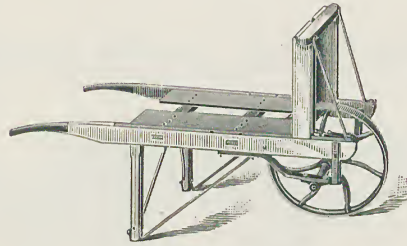
This barrow is provided with quarter springs and holds 84  $2\frac{1}{2}$ -inch or 60 3-inch tile, and other sizes in proportion.

It is well balanced, runs easily, and saves breakage in transferring unburned tile into the kiln.

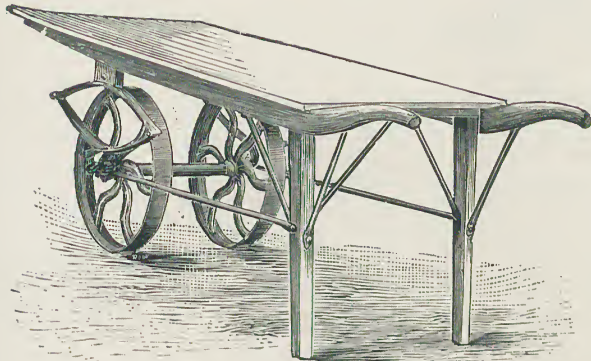
The springs also add to the life of the barrow, and to the ease with which the load is carried.



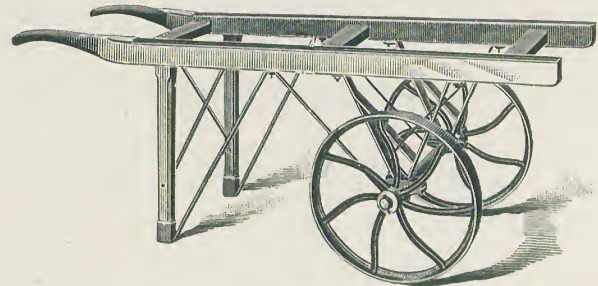
## BRICK AND TILE TRUCKS, STYLE "F"



No. 3, Style "F" Wheelbarrow, with or without Springs.  
Weight, 85 pounds.

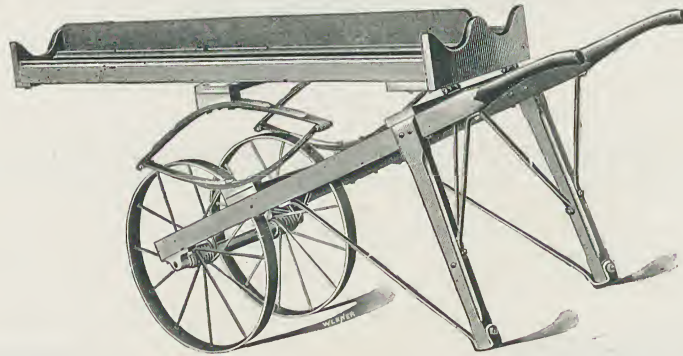


No. 5, Style "F" Platform Spring Truck, for off-bearing brick or tile from machine. Weight, 140 pounds.



No. 7, Style "F" Open-Top Truck, for off-bearing brick on pallets from machine. Weight, 130 pounds.

## No. 8 SPRING TRUCK FOR PRESSED BRICK.



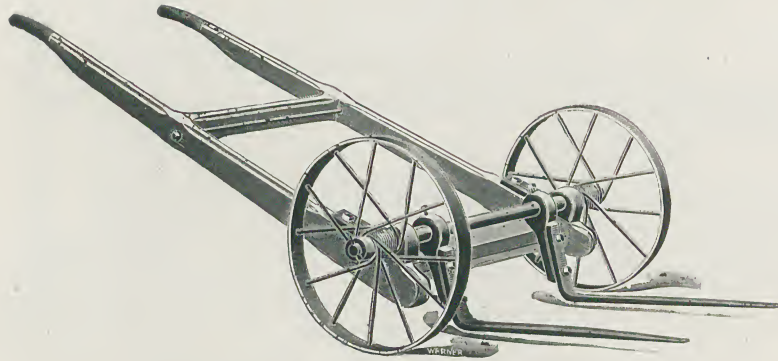
This truck is especially designed for trucking semi-dry pressed brick from machine to kiln.

It is built with one or two wheels, with two handles, and with two wheels with one handle. With or without rubber strips in the bed pieces to carry the brick.

When rubber strips are used, the top is constructed as follows: In the center of each bed piece on the top side is plowed a groove  $\frac{1}{4}$ -inch deep by  $\frac{1}{2}$ -inch wide, and in this groove is glued a strip of soft rubber  $\frac{1}{2}$ -inch square, leaving the rubber projecting from wood  $\frac{1}{4}$ -inch on which the brick are placed. The wheels are 20 inches diameter, wrought iron, forced on axle. It is made with or without center board.

This truck is thoroughly braced.

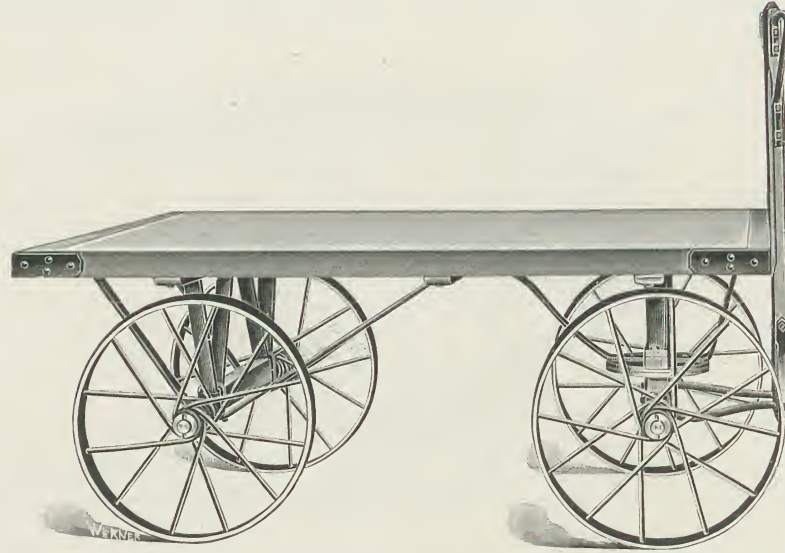
## PIPE TRUCK



Designed for sewer pipe factories. Wheels wrought iron 22 inches diameter by 2 inch face, steel axle. Prongs adjustable. Handles well seasoned white oak.



## PLATFORM PIPE WAGON

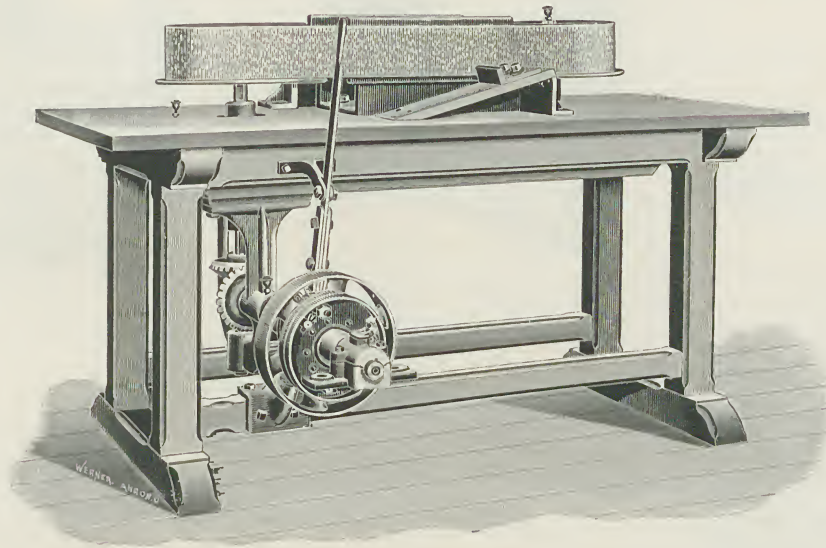


Size of standard top, 3 feet by 5 feet 6 inches.

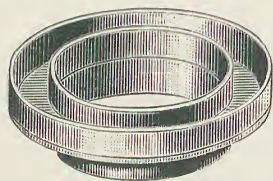
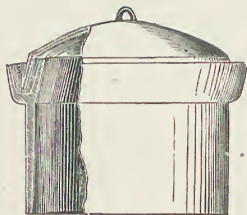
Wheels wrought iron 22 inches diameter by 2-inch face. Extra long hubs. Steel axles wrought iron, fifth wheel large in diameter. Wagon thoroughly braced throughout.

All wood used in the construction of this wagon is thoroughly kiln dried.

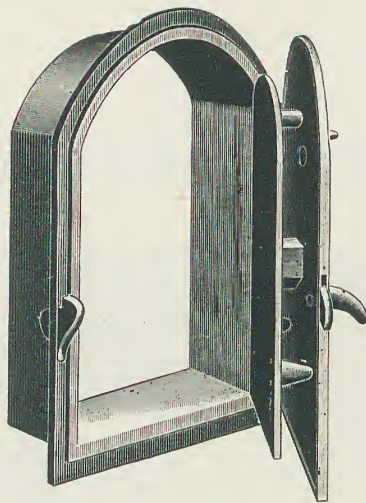
## BUFFING MACHINE



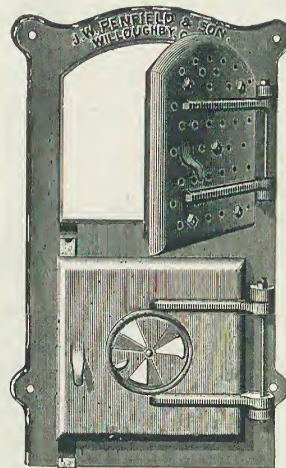
This machine is designed for use in enameled brick works for buffing off the sides and ends of enameled brick. Heretofore work of this kind has been accomplished by hand, and by the use of our Buffing Machine a much greater amount of work can be produced at a reduced cost, and at the same time more perfect brick are obtained. The edges are retained in better shape by this process than by hand. The machine is fitted with a friction-clutch pulley, 14 inches diameter by 3-inch face, and should make about 100 revolutions per minute.



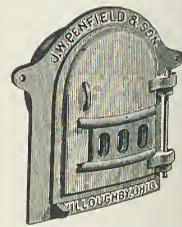
Cast Rings and Covers for Crowned Kilns.



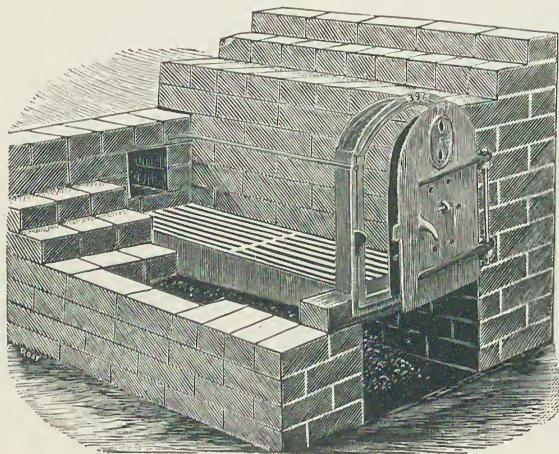
Kiln Door.



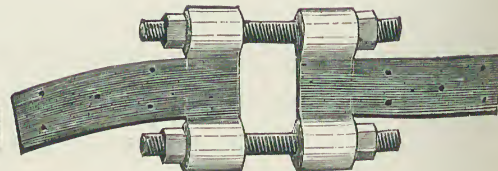
No. 4 Kiln Door.



No. 2 A Kiln Door.



Grate Bar.



Kiln Band Clamps.



## IRON WORK FOR KILNS

In the accompanying cut are shown cast-iron rings and covers for use in a Crowned Kiln. The groove around the ring is filled with sand so that when the cover is in place there is no heat likely to escape. We make three sizes, 8, 10 and 12 inches in diameter.

### KILN DOORS

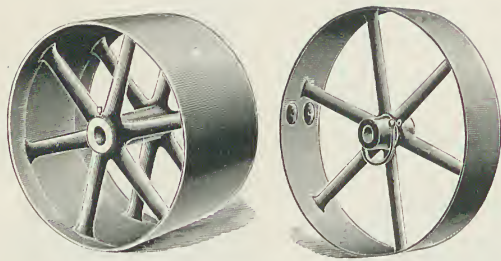
These we make either single or with a protection plate on the inside, which can easily be replaced when burned out. We make the following sizes: No. 1 A, plain flat door, with or without sliding draft, as desired; size of opening, 13 x 17 inches. No. 1 B, 18 inches high, 14½ inches wide. No. 2 A, convex door. Size of opening, 13 x 17 inches. Weight, about 70 pounds. No. 2 B, 14 inches high 14 inches wide. No. 3, 16 inches high 13 inches wide. No. 4, furnace and ash door combined, as shown in cut. Weight, about 250 pounds.

### GRATE BARS

We furnish the following sizes: No. 1, 36 inches long 2½ inches wide; weight, 34 pounds. No. 2, 26 inches long 7 inches wide; weight, 64 pounds. No. 3, 50 inches long 3¼ inches wide; weight, 44 pounds. No. 4, 50 inches long 3 inches wide; weight, 40 pounds. No. 5, 32 inches long 2¾ inches wide; weight, 23 pounds. No. 6, 24 inches long 3¼ inches wide; weight, 21 pounds.

### KILN BAND CLAMPS

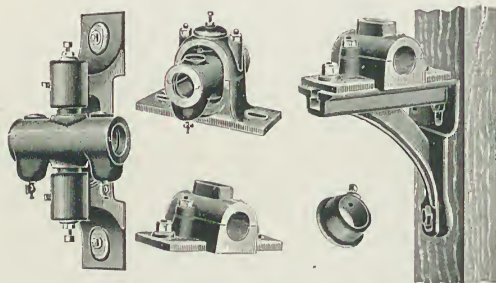
These are furnished in three sizes: No. 1, 4-inch. No. 2, 5-inch. No. 3, 6-inch.



LINE SHAFTING, CAST PULLEYS



PLATE & COMPRESSION COUPLINGS



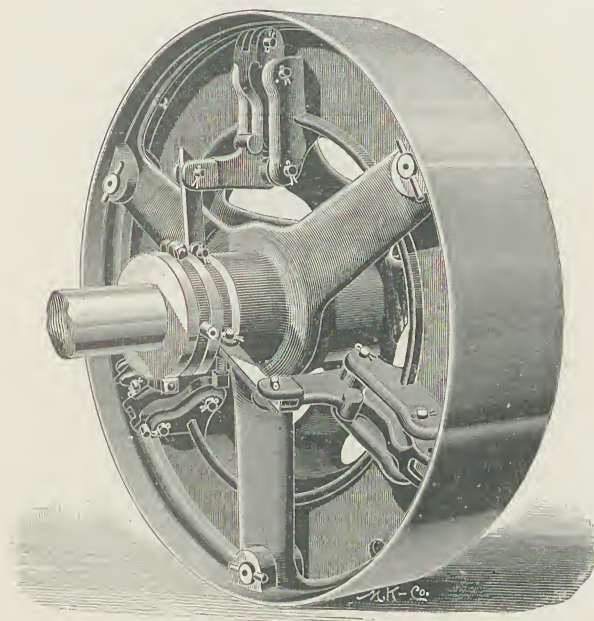
HANGERS, SET COLLARS E.T.C.

## POWER TRANSMITTING MACHINERY

Our equipment includes a full line of patterns for cast pulleys, plate and compression pulleys, pillow blocks, ball and socket boxes, hangers, set collars, etc., and we shall be pleased to submit estimates upon anything required in the line of Power Transmitting Machinery. All shafting is finished to gauge and straight. All pulleys are bored, turned and balanced. Tight pulleys have key seat or set-screw, as preferred, and loose pulleys are provided with self-oilers. All couplings are fitted with turned bolts. Rigid pillow blocks are furnished with or without brackets, as desired. We can furnish ball and socket boxes of either the pedestal or post hanger or drop hanger type, arranged with automatic oilers and wipers, self-contained.

Interested parties should write for estimates and for our Catalogue of Imperial Friction-Clutches, which contains illustrations, descriptions and price lists of our complete line of Power Transmitting Machinery.

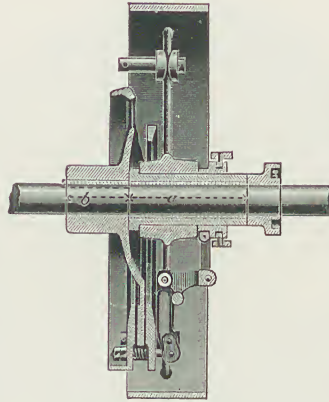
# THE IMPERIAL FRICTION CLUTCH PULLEY



The accompanying views represent our Patent Imperial Friction Clutch Pulley, which offers decided advantages in point of increased efficiency and durability, ease of adjustment and repair. The pulley is provided with a friction disc between two friction rings, the friction disc being keyed to the shaft, but the balance of the clutch mechanism and the pulley itself being loose on the shaft. The clutch levers clamp the friction disc between the friction rings, setting the pulley in motion. Where Imperial Clutch Pulleys are used as driving pulleys on the line shaft, they can be stopped and adjusted without stopping the line shaft, as the clutch mechanism will come to a standstill when thrown out of clutch. The friction surfaces are protected by renewable strips of insulated fibre. The bushings are readily renewable. The



shaft upon which Imperial Clutch Pulleys are can be run at any speed, as centrifugal force cannot throw the pulley in or out of clutch or out of balance. The clutch mechanism is powerful and quick acting, and is all inside the lines of the pulley, lessening the liability of damage to



Sectional View

belts if thrown off. There are only three bolts in a complete pulley, consequently the liability of annoyance from nuts loosening is reduced to a minimum. Coiled springs spread the friction rings apart when out of clutch. All wearing parts can be renewed. The pulley is first-class, and we can fully recommend it.

### CUT-OFF COUPLING

We also manufacture an Improved Friction Clutch Cut-Off Coupling made upon the same general principle as the Clutch Pulley.

For complete description and price list of our Clutches and Power Transmitting machinery, send for our catalogue of Imperial Friction Clutches, which will be mailed free upon application.



FRED SHECKLER CO.,  
 BUEYRUS OHIO.  
 SOLE MANUFACTURERS OF DURANT BROS.

ROMANESQUE COTTAGE - No 1  
 CONSTRUCTED OF  
 DURANT'S ORNAMENTED, LAP-JOINTED, TERRA COTTA BLOCKS.

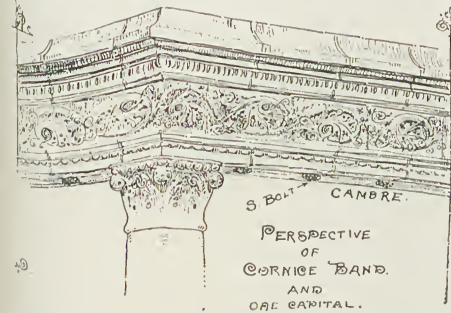
PRESENTED BY -

PHOTO-CHROMATIC PRINTS BY  
 COLUMBIAN P. & E. CO., CHICAGO.





# ORNAMENTAL BUILDING BLOCKS

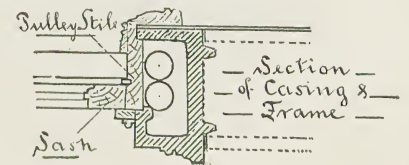


the narrow mortar-joint at the end of the block. This lack has been fully met by the introduction of our *patent lap-joint*, shown in several of the annexed cuts.

## SECOND

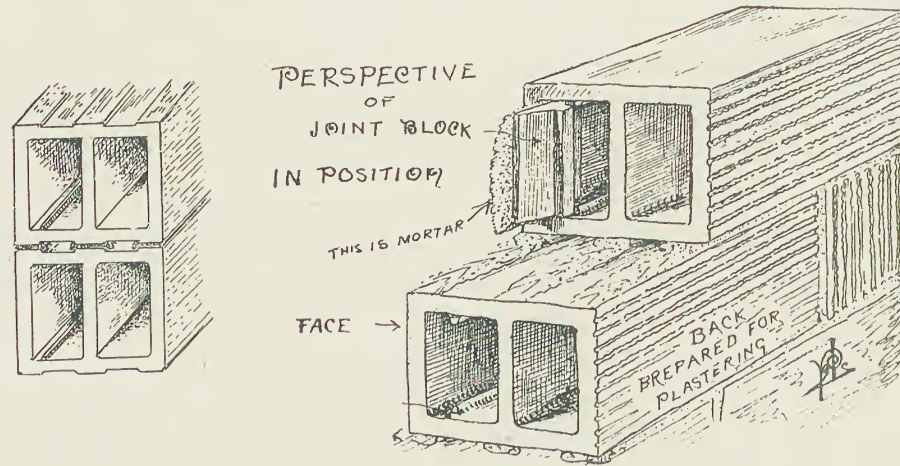
We have introduced window and door-casing blocks, formed to receive window or door frames within a recess, bedded in mortar, and at the same time with flanges which enter the ends of wall blocks, binding the casing blocks thoroughly with the wall, and furnishing *lap-joints* at this point also. Heretofore the weakest point in a wall composed of hollow blocks has been in the difficulty of setting window and door frames, so that the mortar next the frame should not be disrupted by the shrinkage or rough usage of doors.

It will be seen by reference to the accompanying sketch that the casing blocks, when used for windows, can be made to do duty as weight chambers also. The sketch shows how simply the wood casings can be made and attached. (Several different designs of casing blocks are shown on other pages.)



### THIRD—A HOLLOW BLOCK HOUSE

Properly constructed, may be safely plastered *without furring or lathing*. As blocks have heretofore been made this has not been safe, owing to three things. *First*, A possible poor joint at the end of blocks—this has been met and cured by our “joint block” already referred to. *Second*, The danger of leakage about windows and doors, which has been done away with by our casing blocks as already described. But a *third* difficulty remained, viz., the liability of a continuous mortar-joint (mortar being somewhat porous) carrying enough dampness through a wall in extremely long and heavy storms to *discolor a wall* even though the mortar-joint be sound.

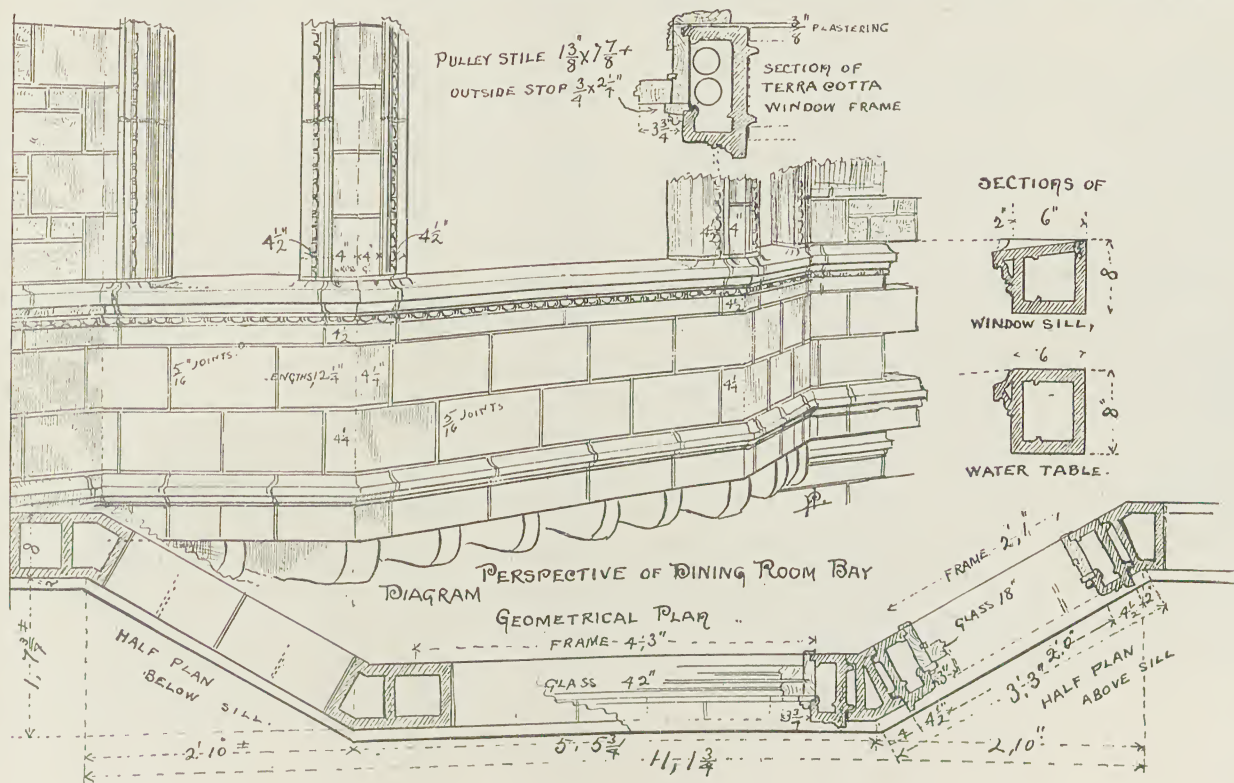


This difficulty has been fully met by our recent improvements in the form of the top and bottom of blocks. The mortar-joint is broken by one or more chambers, as shown in the sketch annexed, and at the same time the block is more easily laid. This renders it impossible that the mortar convey dampness through the wall. The raised portions of block are but  $\frac{1}{8}$ -inch, but with the thickness of the mortar added, a half-inch chamber is had, and the result is a perfectly dry wall without lathing—the coolest wall in summer and the warmest in winter, because of air chambers throughout, and a wall with no fire ducts to carry fire from basement to attic, as in the case of furred out and lathed structures—besides a material reduction in the cost of the building.

It is well known that a brick wall must be furred and lathed or dampness and mildew will be sure to result.

The sectional view of a bay window found on this page is designed further to illustrate our system of block construction. It will be seen that by use of angle blocks of new and special forms, together with our casing blocks, we are able to accomplish, in a most effective manner, what has hitherto not been attempted.

Our aim has been to meet every requirement of building construction, in laying up a wall, and to do this to the acceptance of the best architects and building contractors, who have been constantly consulted as the work has been carried forward. The system has been rendered independent of brick, from foundation to chimney-top. The new forms of blocks are more distinctly shown on later pages.





## AS TO HOLLOW BLOCKS GENERALLY

The free use of hollow fire-proofing blocks, in the last twenty years, has fully established them in the minds of architects and builders as possessing strength for almost any demand that may be made upon them. We may say that the tests made by experts have shown that a plastic fire-clay block, well burned, 8 x 8 x 16 inches in size, will bear a strain of 200,000 pounds and upwards. This for blocks with 1-inch walls; and it will be seen that walls of blocks may be made of any required thickness—and the various forms of blocks shown in our catalogue are evidences that structures with walls of any thickness desired can be as easily provided for as of brick. For depots, halls, churches, and other public buildings blocks can be ornamented both internally and externally—suitable designs being had for the interior. For such structures the hollow block is to play an important part in the future.

We call attention to the new designs of blocks added during the past few months. Up to the present season, the blocks produced have shown mainly broken-rock faces. These are quite appropriate for foundations above the grade-line, but they have come very far from meeting the requirements of lovers of the artistic.

We are constantly adding to our designs, and expect to meet every reasonable requirement of architects and builders, having at our disposal the talent of those who have made a special study in this line, as well as men specially skilled in this branch of die making. Our aim is to enable users of our machinery for producing blocks to meet the requirements of the man who would build a \$1,500 cottage, and equally the requirements of the man who would build a \$50,000 mansion.

## IN THUS INTRODUCING

This class of clay work to the trade, we need to add to what has been written, that the machinery is not sold on the same basis as our machinery generally.

Both the machinery and blocks are covered by various patents, and patent applications recently filed; and while we are the exclusive manufacturers of the machinery we are not the licensors.

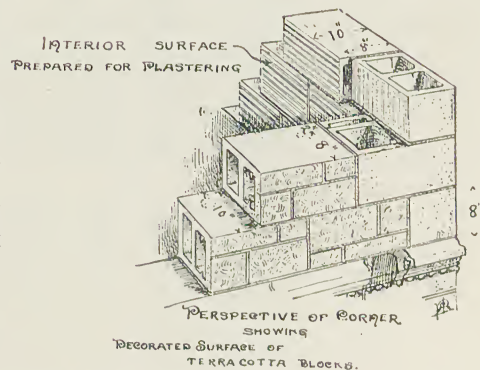
The patentee, E. G. Durant, of Pasadena, California, desires to license only such parties as have good clays for the purpose, that can be partially vitrified at not too high a heat and not too large a shrinkage, to the end that each licensee may produce blocks creditable to the system.

It is his purpose also to license only such parties as will suitably equip plants to secure this end, and, further, to limit licenses to such number of parties in any section of the country as shall find full employment for their outfits. With this in view the entire country is districted, and provisions are made for the harmonizing of the interests of the licensees in the various districts.

The block industry has, only the present season, been fully launched, and the most valuable improvements have been brought out within the past three months, including many valuable features not named, such as laying the burning color into the background of ornamenting designs without any added labor to accomplish the result.

Our broad claim—which is fully sustained by blocks which we are constantly producing from samples of clay sent to us from various parts of the country for testing—is, that 75 per cent. of the Terra Cotta produced at great cost, by hand, by manufacturers of that class of goods, can be produced by our machinery in the hollow block form of an equal grade of finish (the same character of clays being employed) at less than one-tenth the cost of the hand-made wares.

Descriptive pamphlets will be mailed on application.

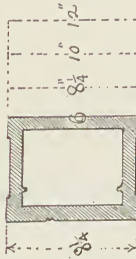




12



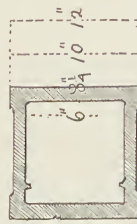
2



11



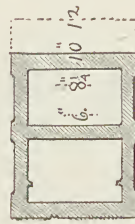
4



5



6



10



50



51



10



52 ROMANESQUE FRIEZE 52

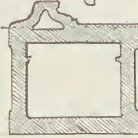


100

WATER-TABLE



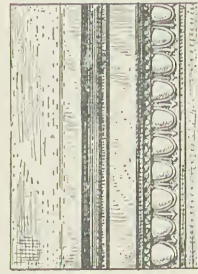
RIGHT CORNER



Section



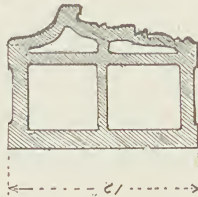
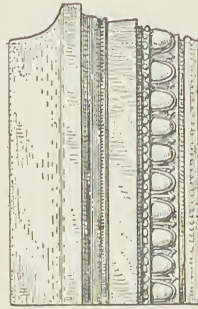
LEFT CORNER



104

CORNER

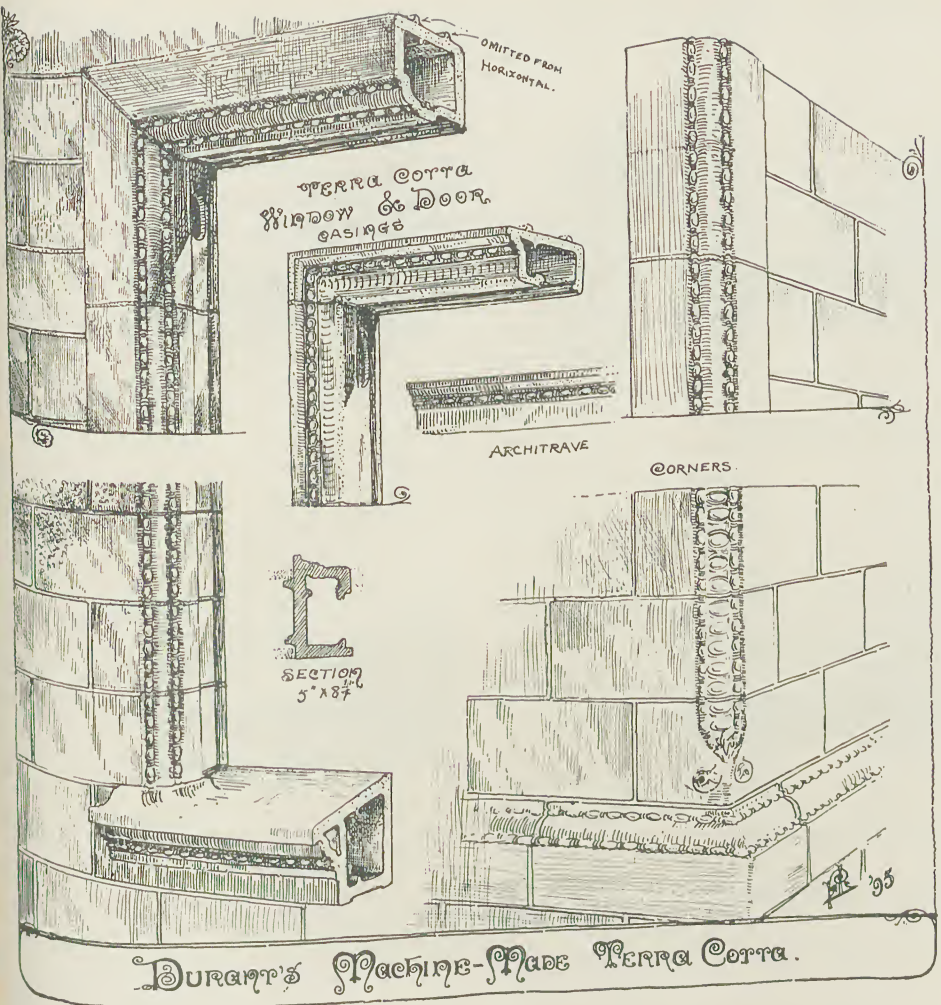
RIGHT CORNER



Section

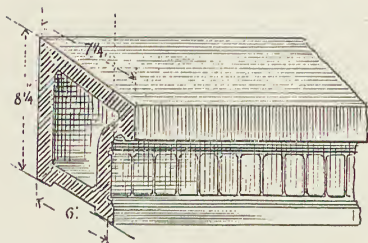
104 CORNER, RIGHT CORNER, ROMANESQUE FRIEZE 104



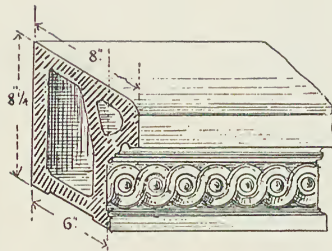


We show on this page Window Casing blocks of various styles in position. A Window Sill is also shown in position. Also an ornamented corner block, and the same style of ornament applied to both corner blocks and a sill course—by which it will be seen that an ornamenting roll can be used for various purposes.

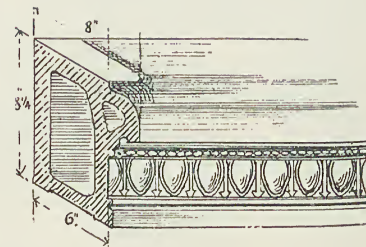
DURABLE MACHINE-MADE TERRA CORRA.



101 D

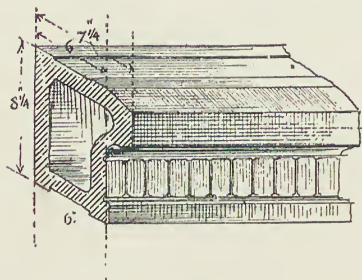


102 D

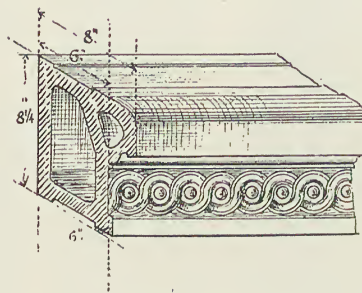


103 D

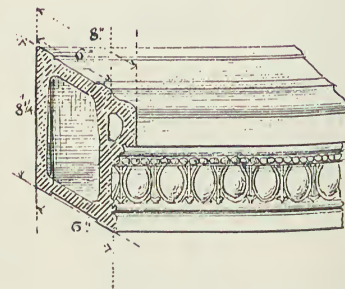
### Window Sill Blocks.



115 D



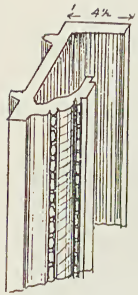
116 D



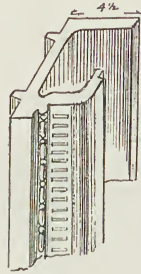
117 D

### Belt Course Blocks.

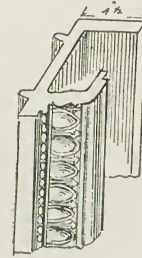
# WINDOW AND DOOR CASINGS



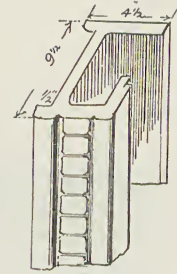
133 D



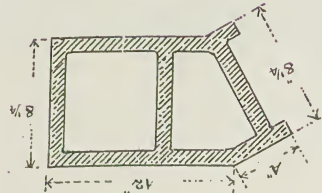
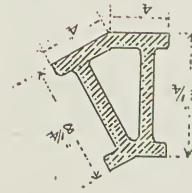
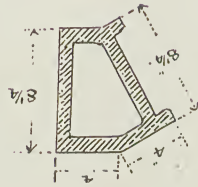
131 D



132 D



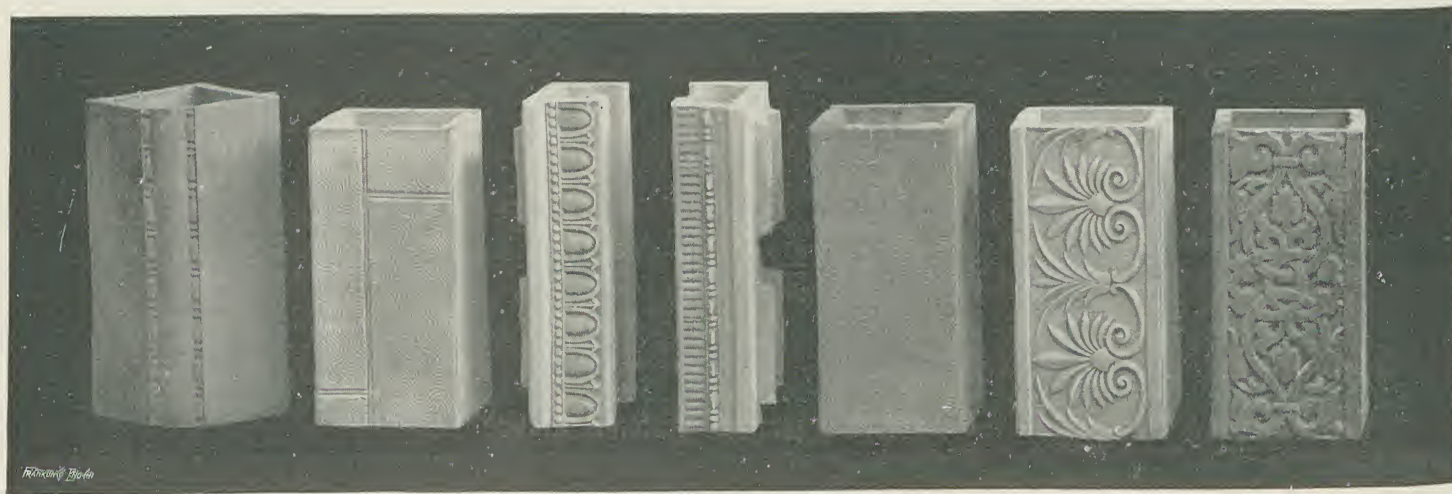
130 D



New Block Forms for 30-degree Angles, with Lap Joints.

For method of using see bay window sketch.





150 D

4 D

112 D

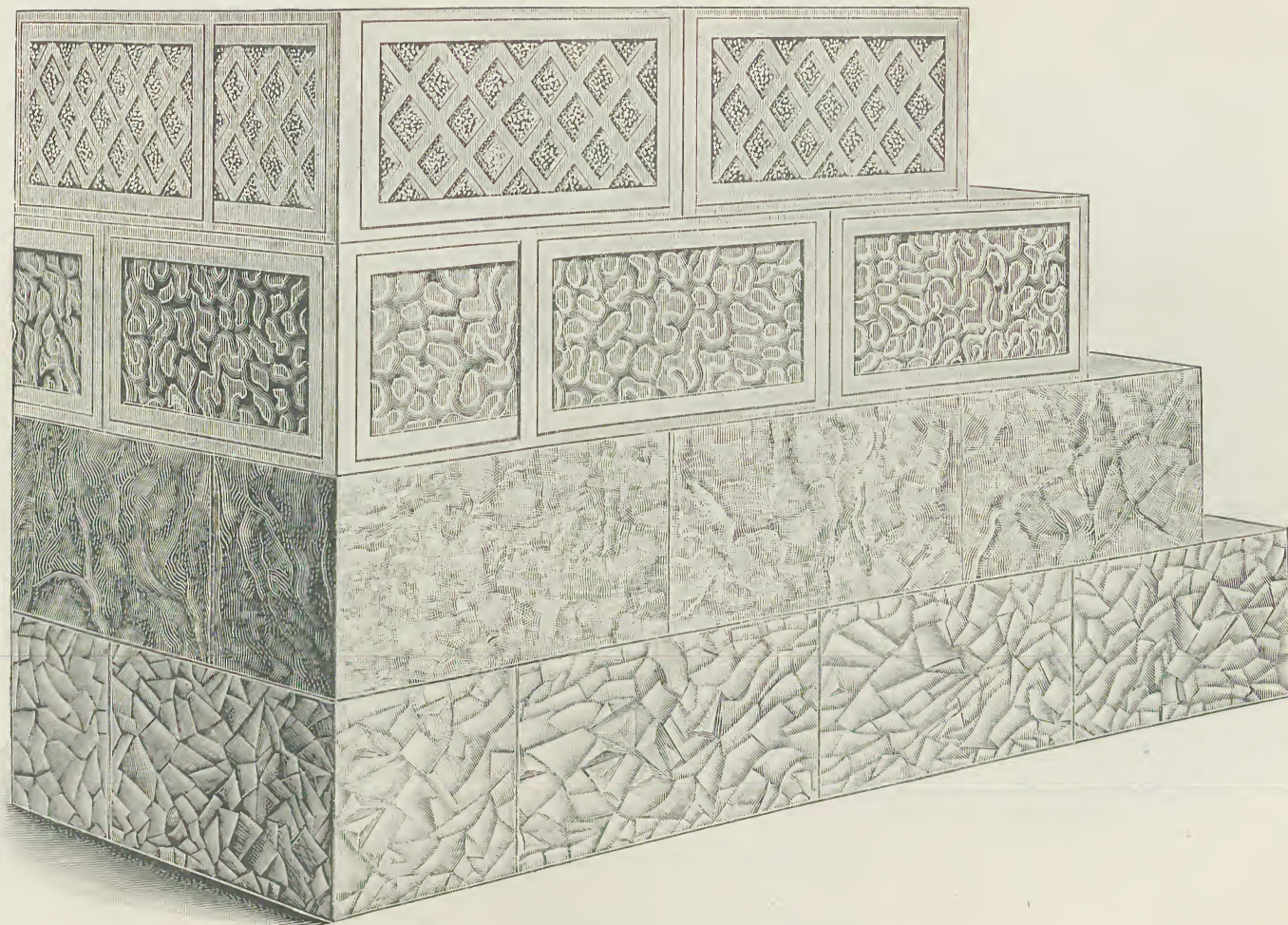
111 D

3 D

51 D

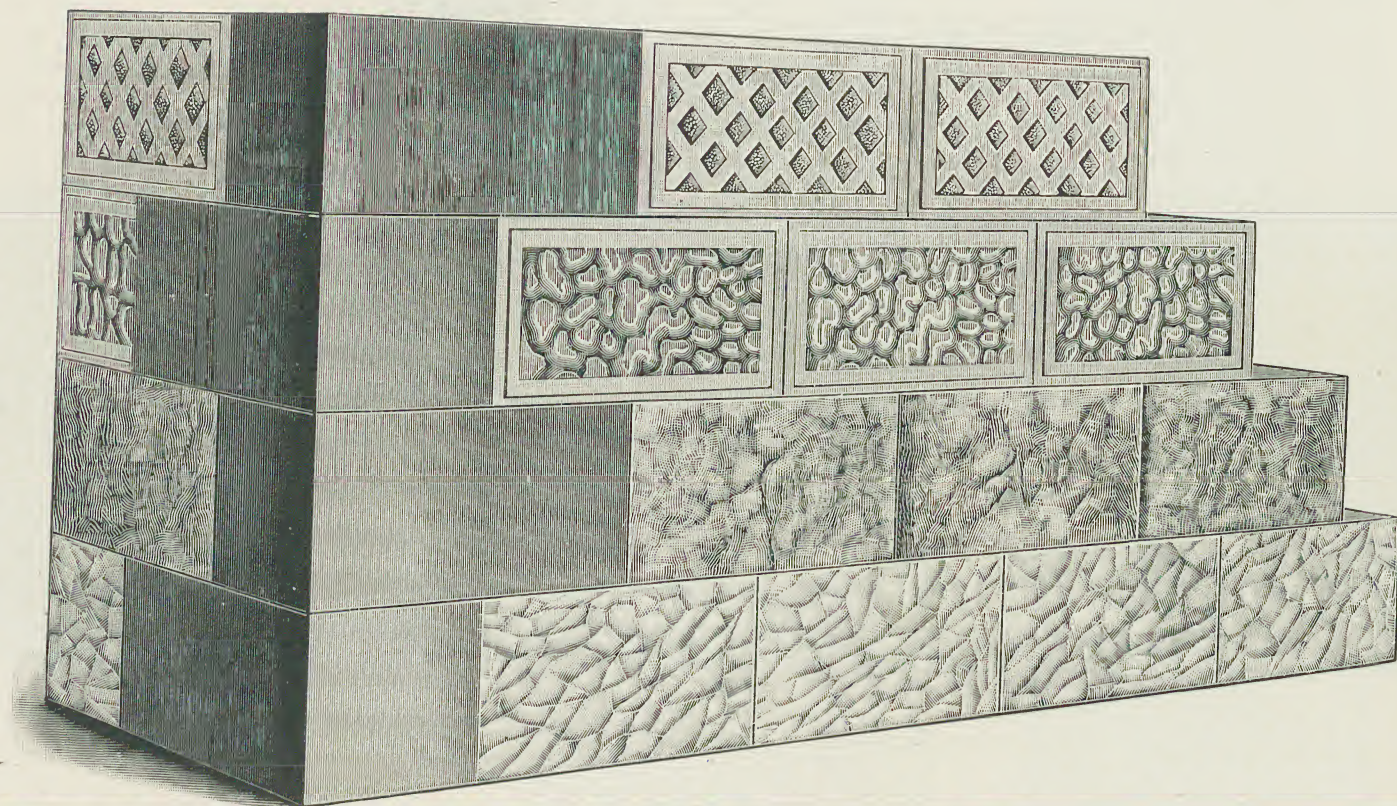
50 D

Building Blocks, Window and Door Casings.



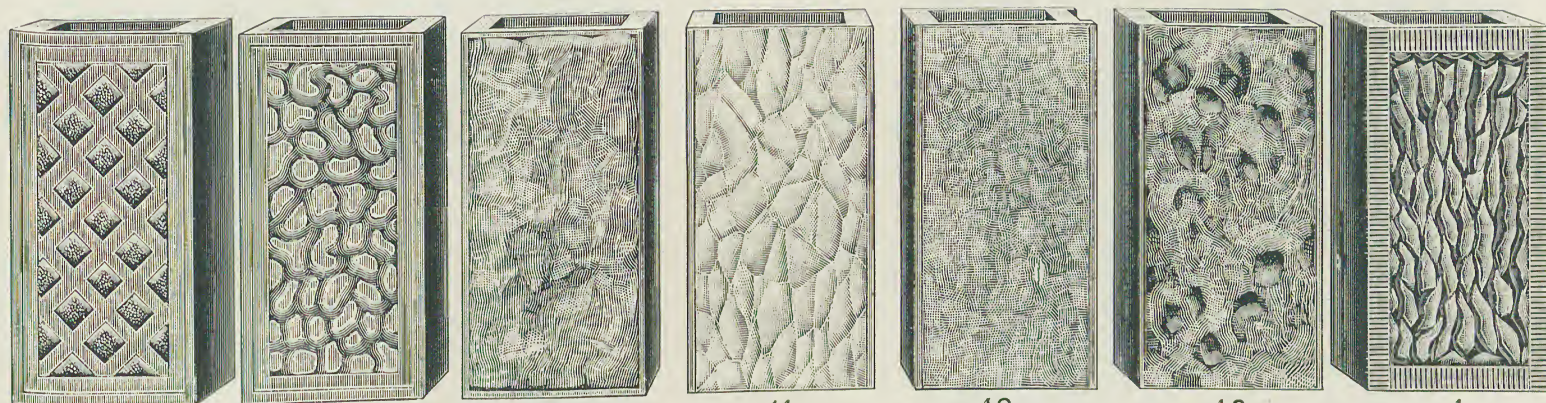
Ornamental Hollow Building Blocks.





Ornamental Hollow Building Blocks.





21

20

13

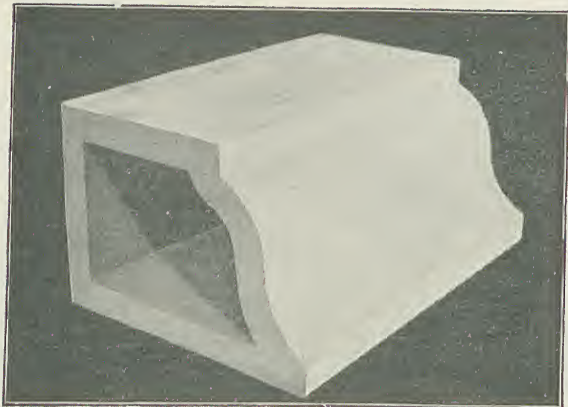
11

10

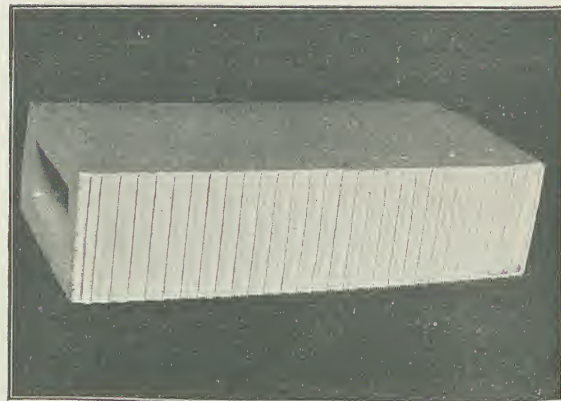
12

1

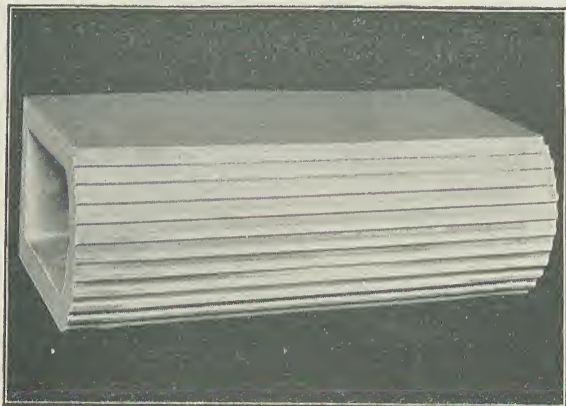
Ornamental Hollow Building Blocks.



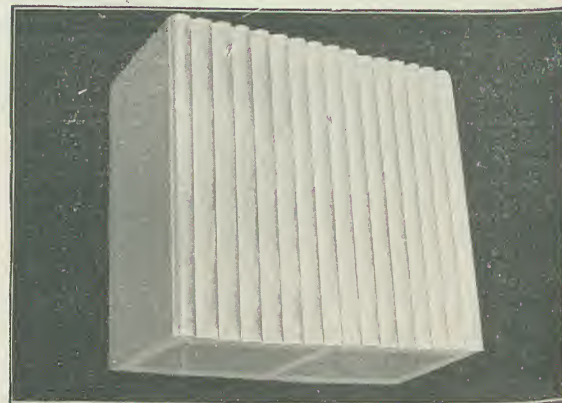
No. B



No. C

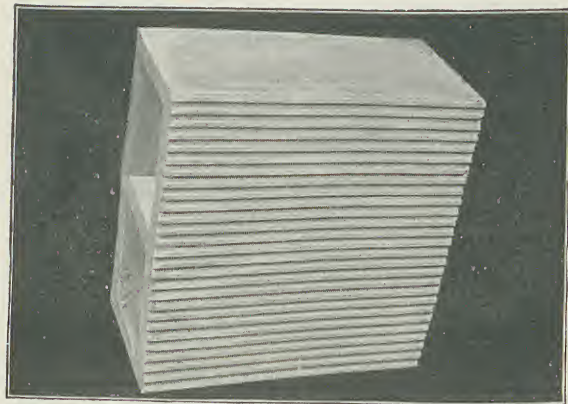


No. H

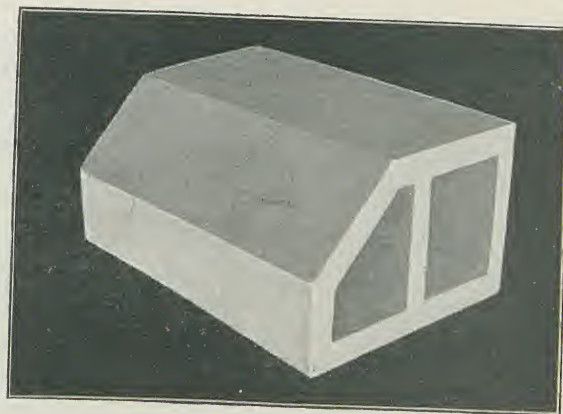


No. I

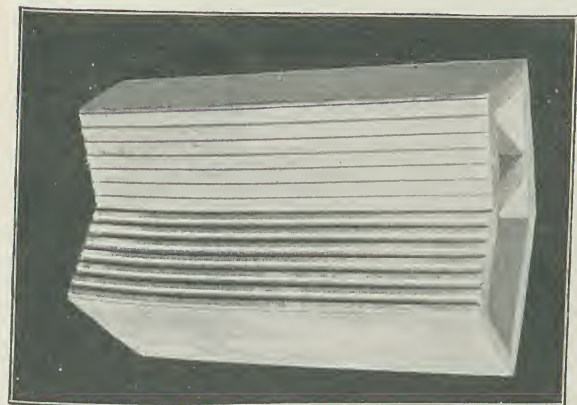
Ornamental Hollow Building Blocks.



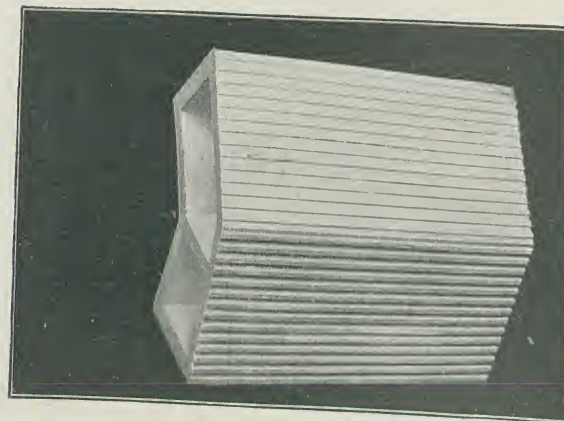
No. J K L M



No. O



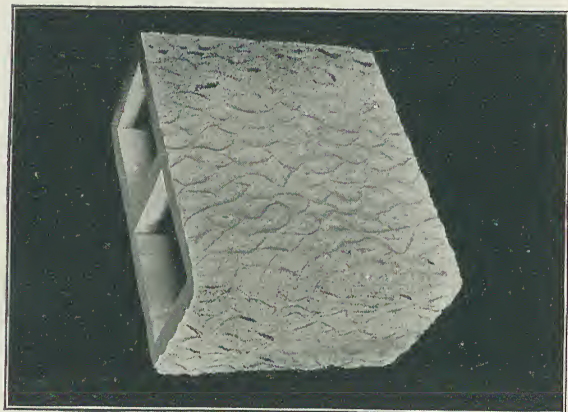
No. R



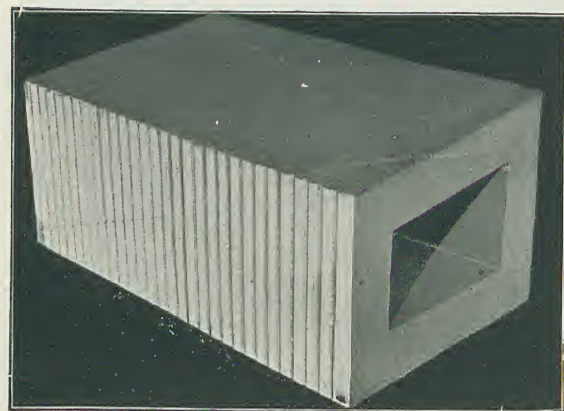
No. R I.

Ornamental Hollow Building Blocks.





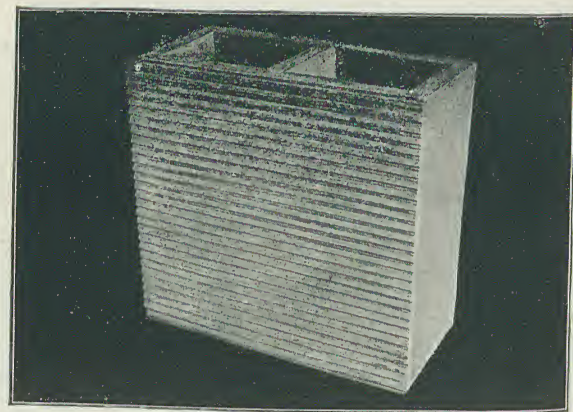
No. 11



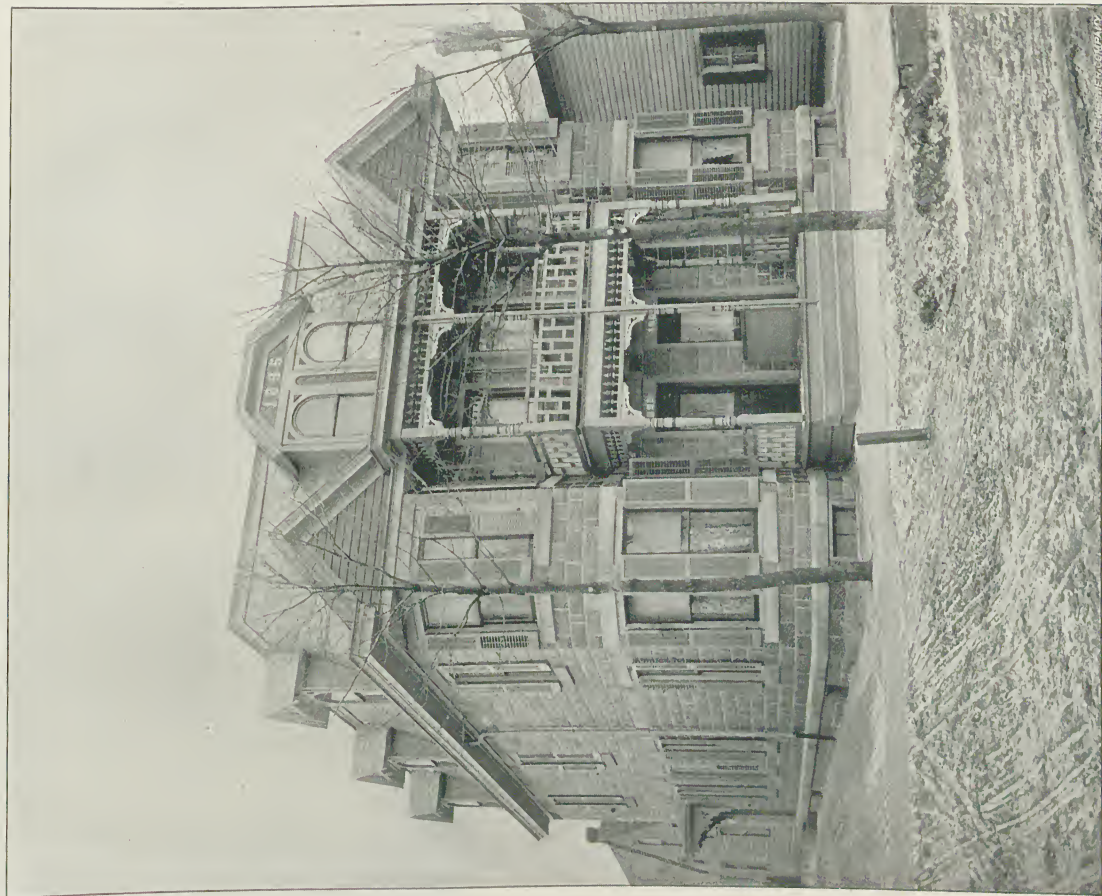
No. 31



No. 30



No. 33







Business Block, Built of Durant's Patent Rock-Faced Hollow Blocks.





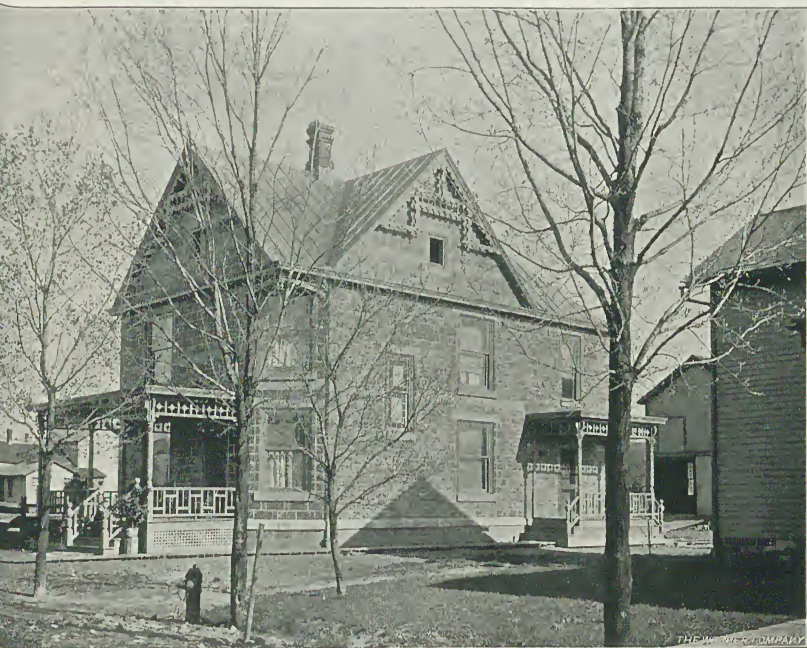


Residences Built of Durant's Patent Rock-Faced Hollow Blocks.



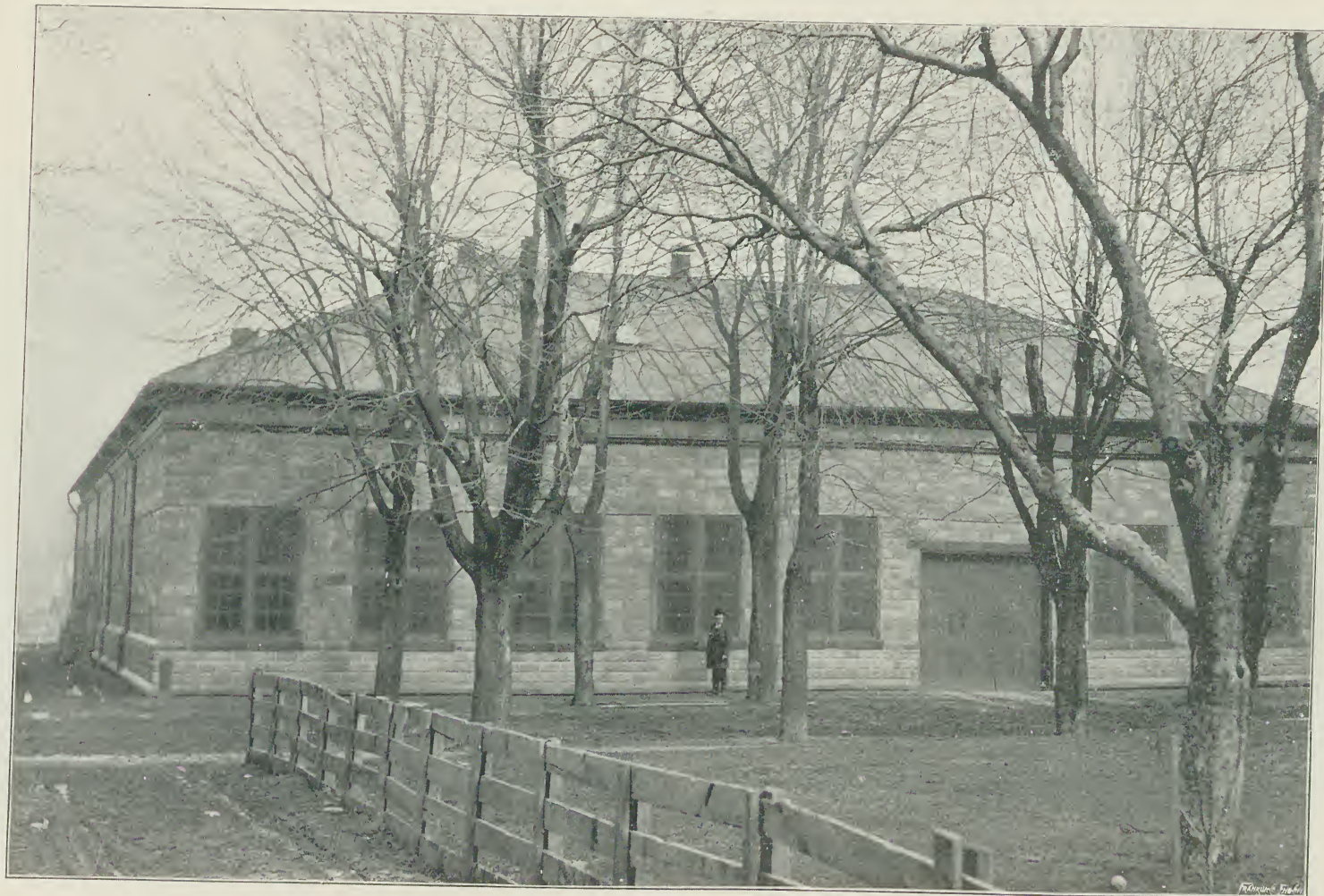
Residences Built of Durant's Patent Rock-Faced Hollow Blocks.





Residences Built of Durant's Patent Rock-Faced Hollow Blocks.





Pattern Storage of The American Clay Working Machinery Company at Bucyrus.  
Constructed of the Durant Hollow Terra-Cotta Blocks.



Foundry of The American Clay Working Machinery Company at Bucyrus.  
Constructed of the Durant Hollow Terra-Cotta Blocks.

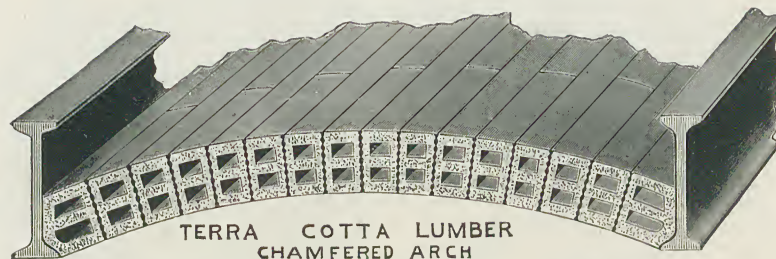


## TERRA-COTTA LUMBER

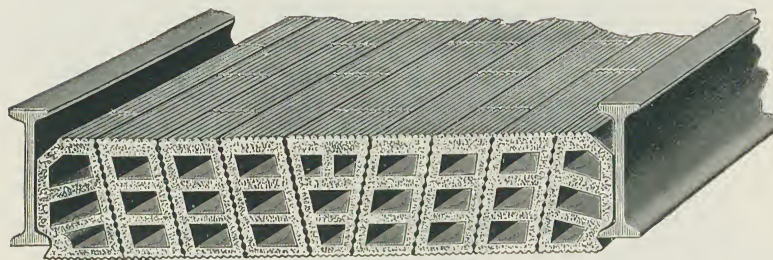
The materials required for the manufacture of this class of ware are gritless clays and sawdust. This material when burned forms a fire-proof building material of great strength and light weight, which can be nailed, sawed, or planed, in the same manner and with the same tools as wood. Its weight is only one-half that of brick, and one-seventh that of iron. It is used extensively for constructing fire-proof arches, partition walls, ceilings, furring for outside walls, sheathing for roofs, and jackets for iron girders, beams and columns. It is also adapted for vault linings, chimneys and furnace linings, under ground electrical conduits, filters, etc. It is a poor conductor of heat and electricity, and is thoroughly fire proof.

Our Plunger Machines and Steam Presses are adapted for producing this class of ware rapidly and economically. Any form or shape of material can be made, from a 14" voussoir arch block to a thin furring or sheathing tile  $\frac{1}{2}$  inch thick and 12 to 16 inches wide. The No. 20 and No. 15 Plunger Machines, and the Horizontal Steam Presses are especially recommended for this class of ware, and in connection with them should be used the necessary clay-preparing and mixing machinery for thoroughly incorporating the sawdust with the clay and tempering the mixture.

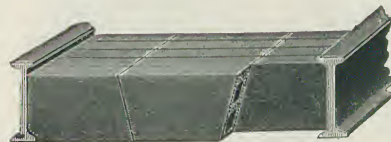




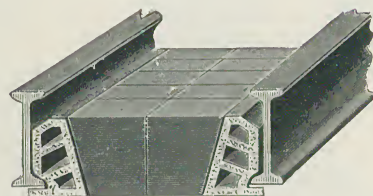
TERRA COTTA LUMBER  
CHAMFERED ARCH



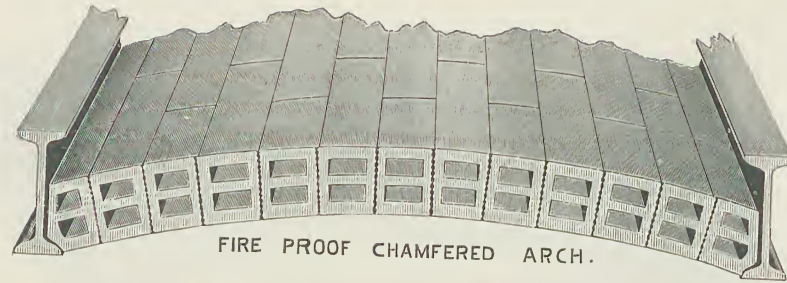
TERRA COTTA LUMBER  
FLAT ARCH



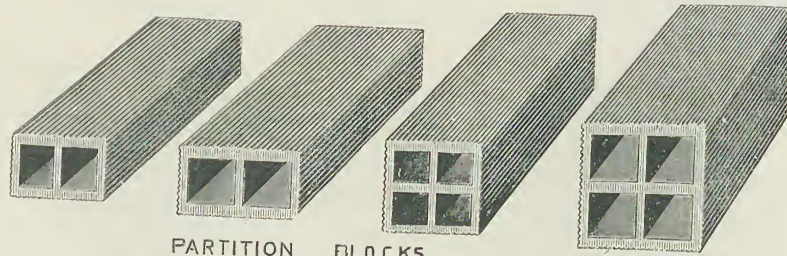
TERRA COTTA LUMBER  
FLOOR ARCH NO. 1.



TERRA COTTA LUMBER  
FLOOR ARCH NO. 2.



FIRE PROOF CHAMFERED ARCH.



PARTITION BLOCKS.



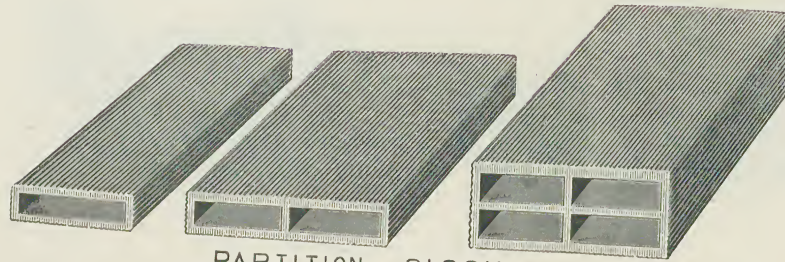
BOOK TILE



FURRING TILE.



FURRING TILE.



PARTITION BLOCKS

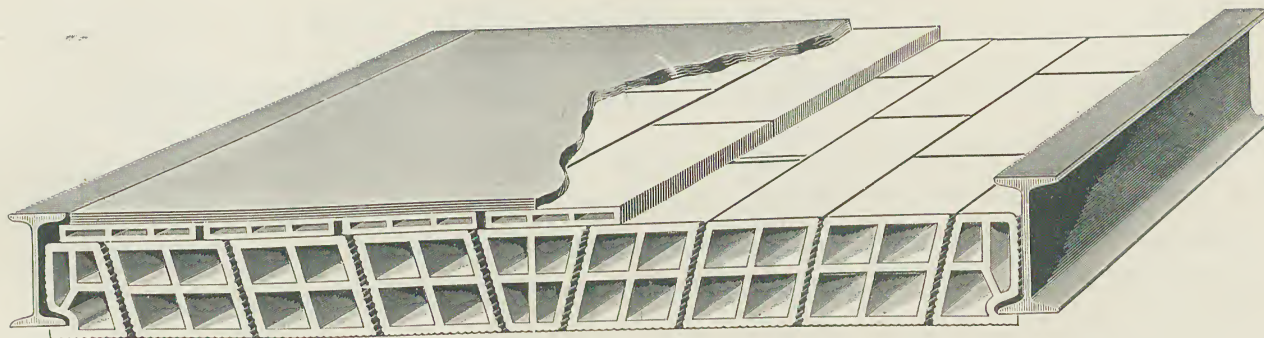
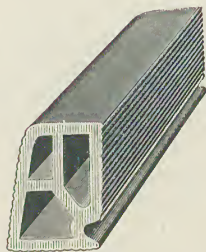


FIG. A.

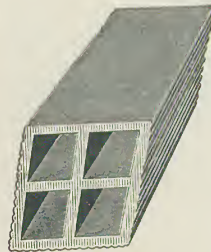
FIG. B.



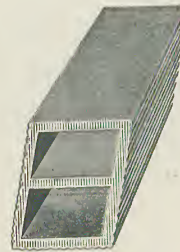
FLOOR TILE  
ABOVE ARCH



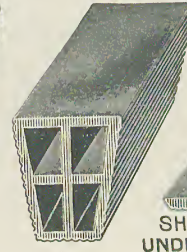
SKEWBACK



STANDARD N° 1.



STANDARD N° 2.



KEY



SHOE TILE  
UNDER I BEAM

Fire-Proof Building Material.

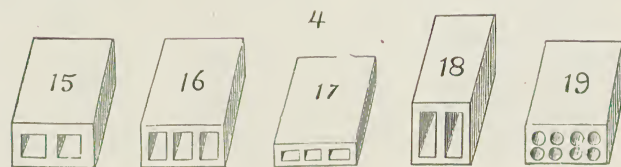
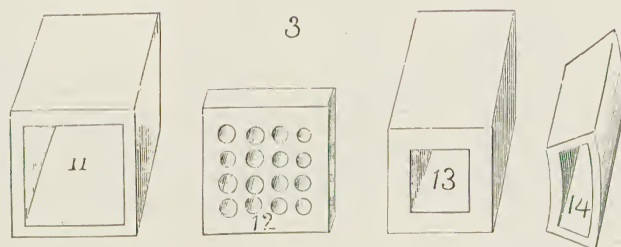
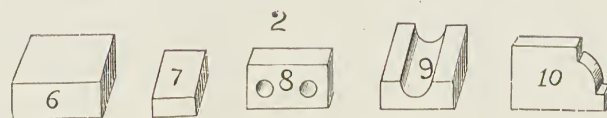
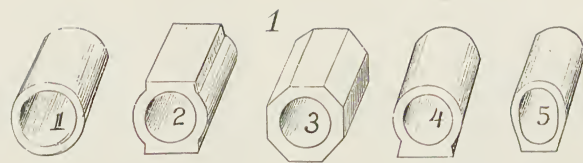


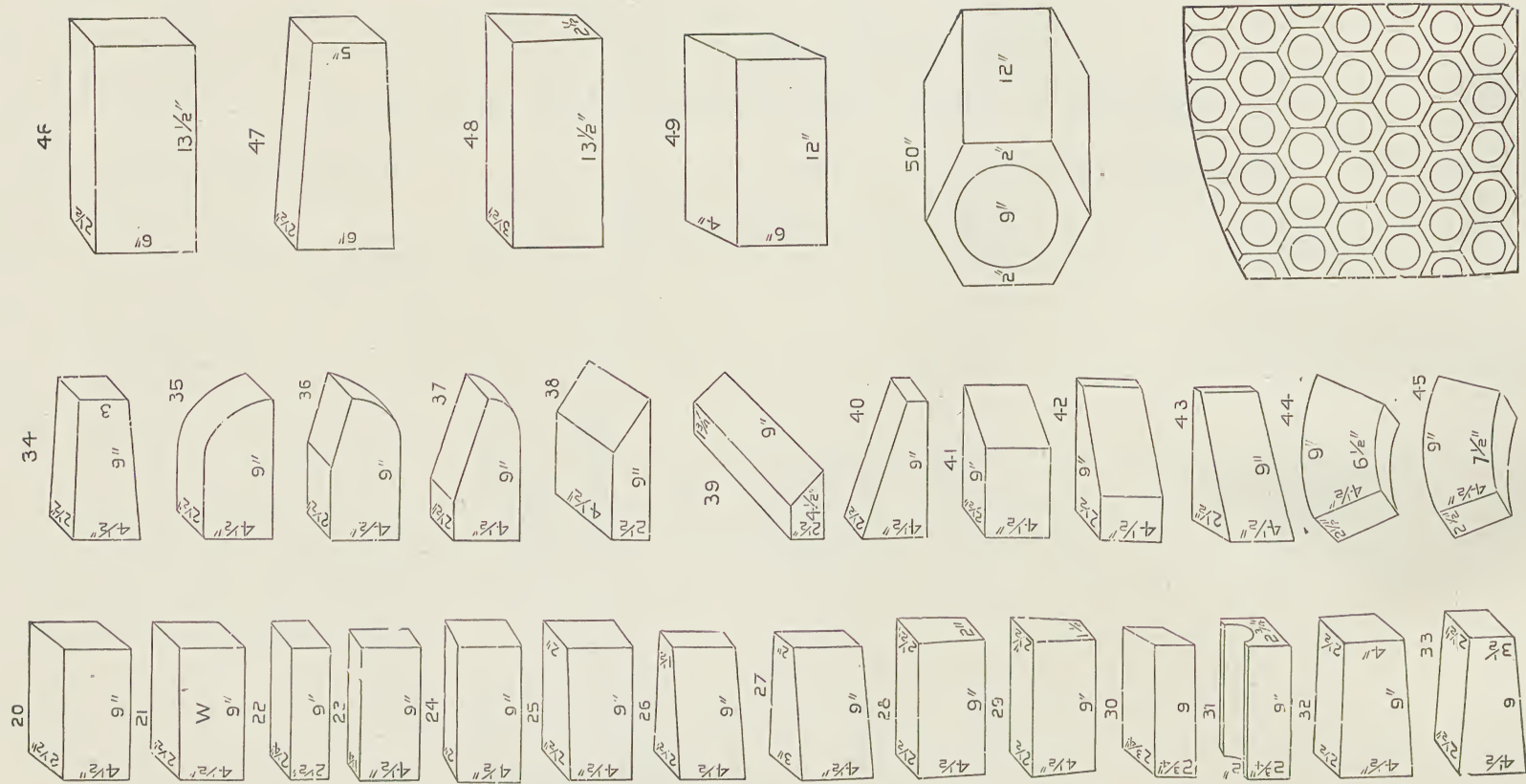
## ILLUSTRATIONS OF DIE FORMS

The illustrations which follow show some of the shapes our Auger Machines are now making for various purposes. The numbers designate the shapes. The sizes of those we have will be given on application, others we make to order. Page 300 illustrates Fire Brick, the numbers running from 20 to 50. The dimensions are given on each shape. These numbers differ from those adopted by some of the fire-brick manufacturers, therefore the exact size should be given us when ordering dies and cutting devices.

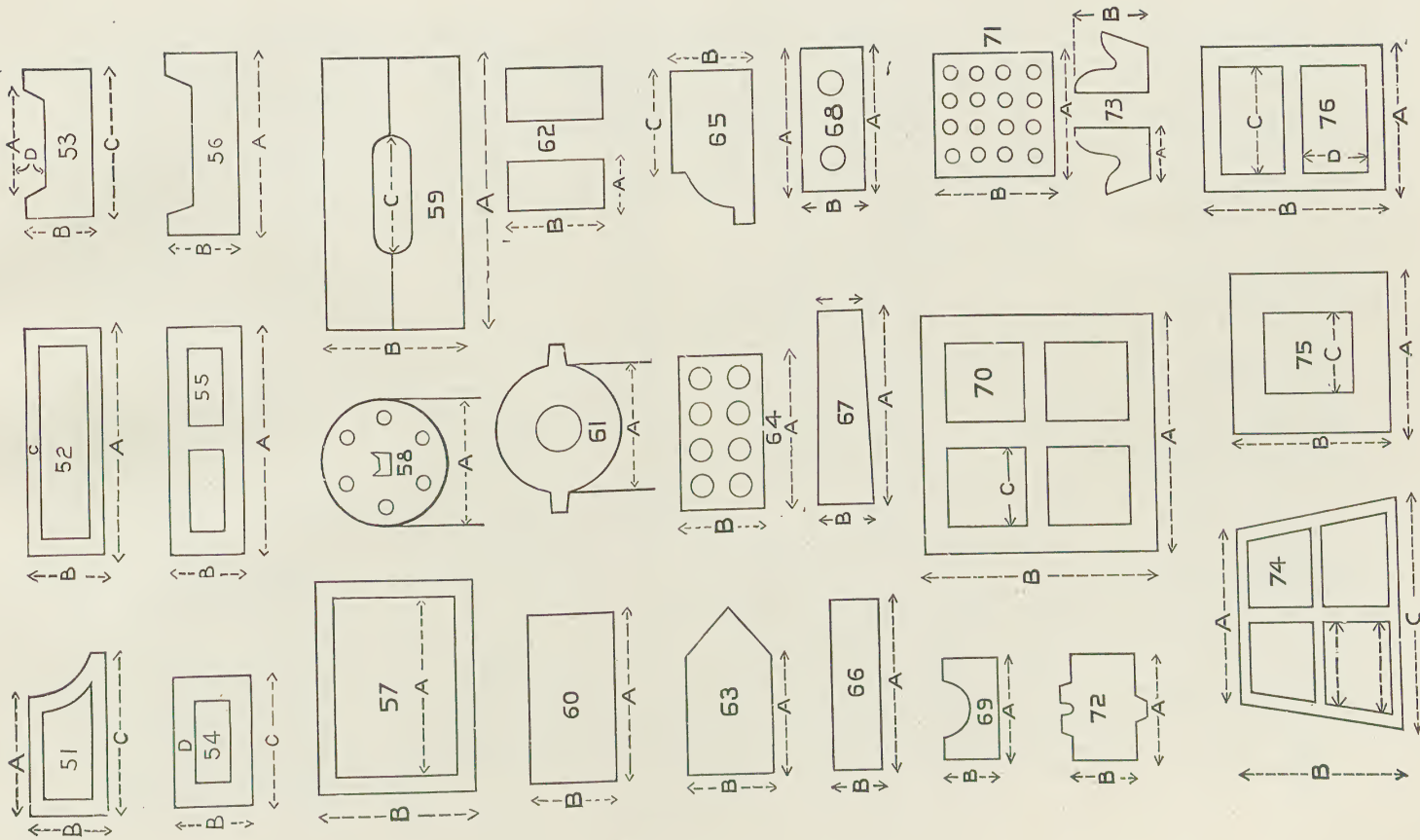
It is a well-known fact that lubricating dies are much superior to those made without lubrication. For some clays nothing but lubricating dies will answer the purpose. For certain shapes, also where small projections are required on the ware, that portion will necessarily have to be lubricated, while often the balance will operate well dry.

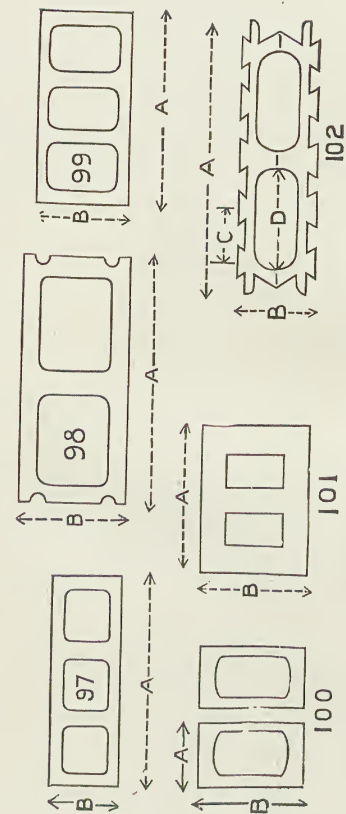
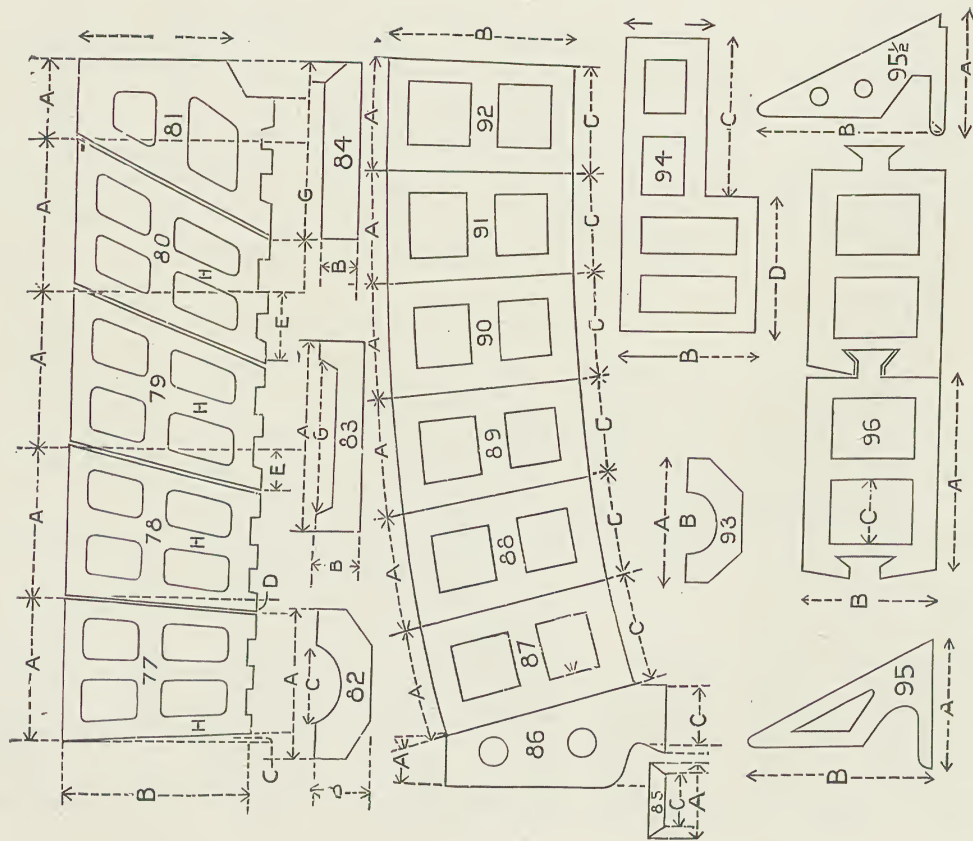
The prices of the dies are therefore regulated in accordance, while for some the figure is given in duplicate, for either lubricating or dry dies. Where difficult pattern dies have to be made, it is often necessary that we have a barrel of the clay to be used with same, so as to test them with it. When clay is sent, MARK YOUR ADDRESS ON THE BARREL WITH LARGE LETTERS. It has been proven in many instances that dies made a certain way will work well in one kind of clay, while the same construction utterly fails in the other. This fact should be borne in mind when the dies are ordered.

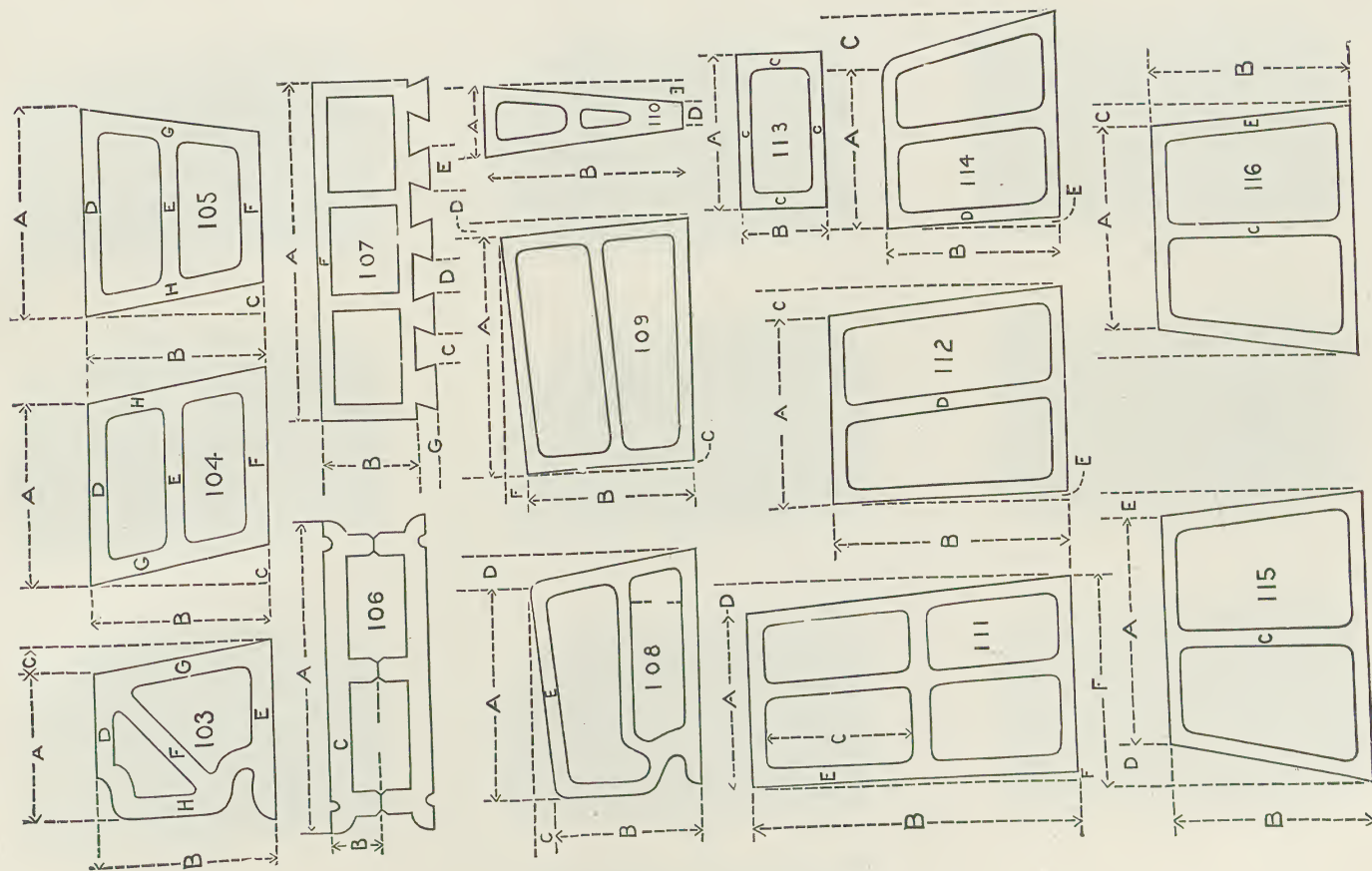








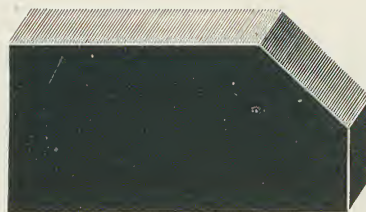




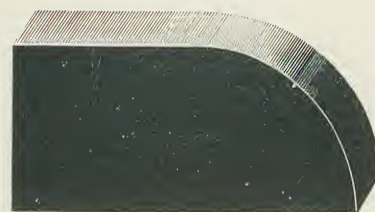




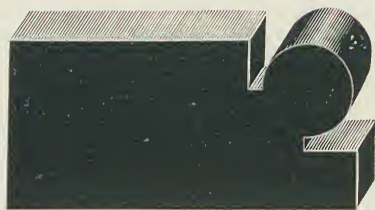
50



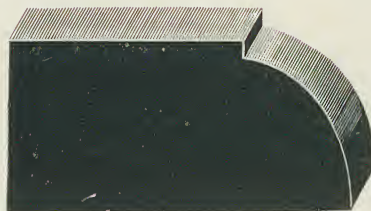
51



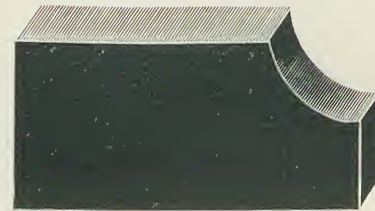
52



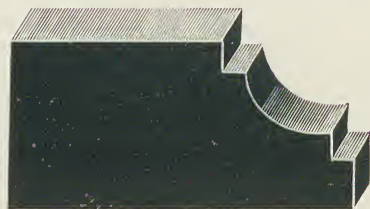
53



54



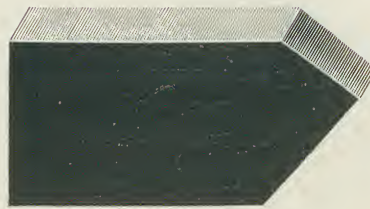
55



56



57

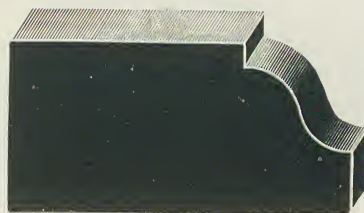


58

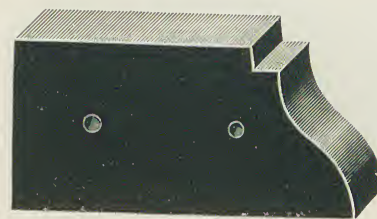
Ornamental Pressed Brick.



59



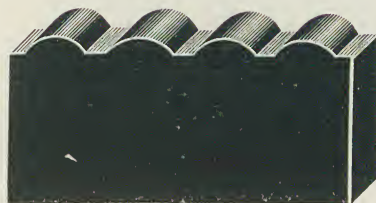
60



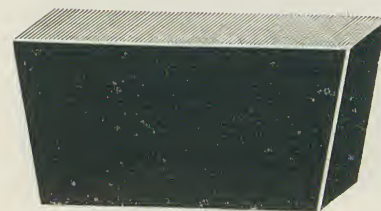
61



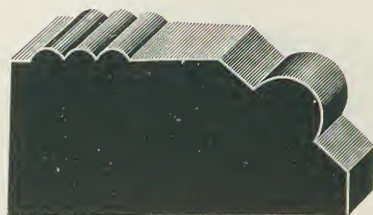
62



63



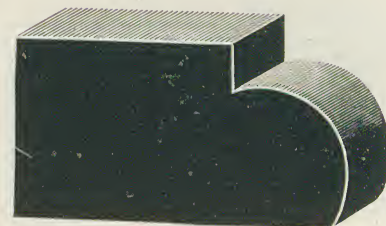
64



65

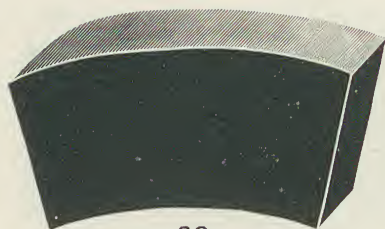


66

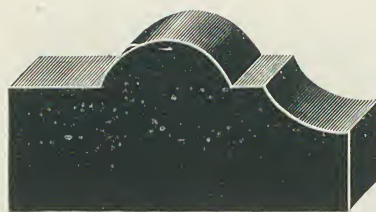


67

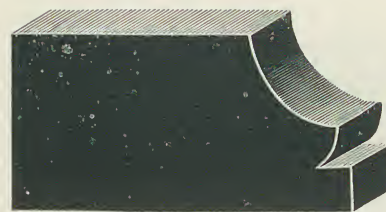
Ornamental Pressed Brick.



68



69



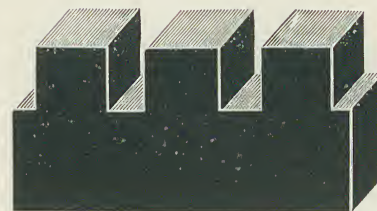
70



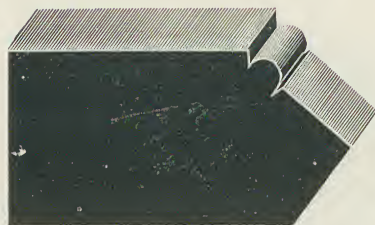
71



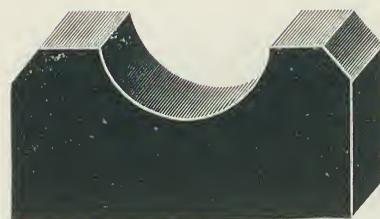
72



73



74



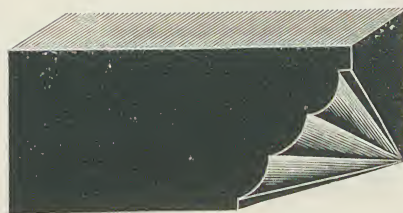
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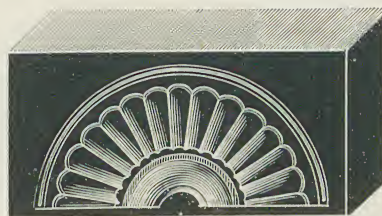
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Ornamental Pressed Brick.

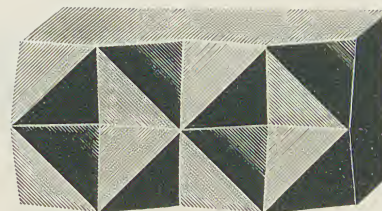




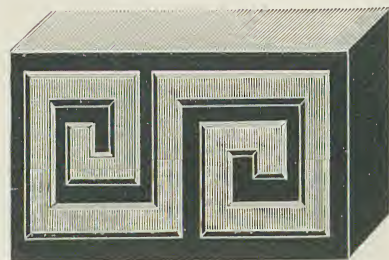
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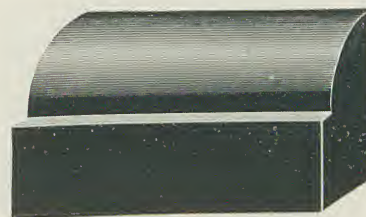
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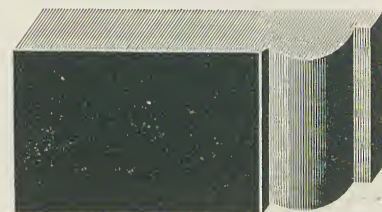
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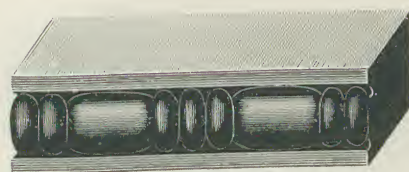
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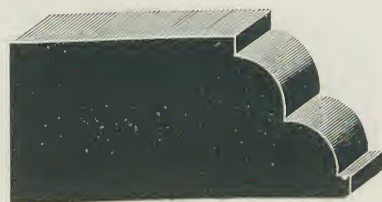
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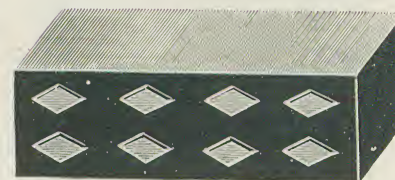
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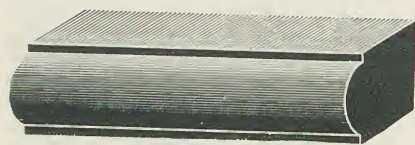


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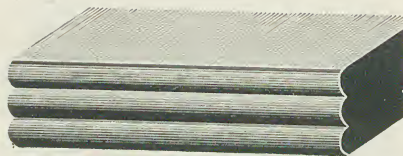


85

Re-Pressed Brick.



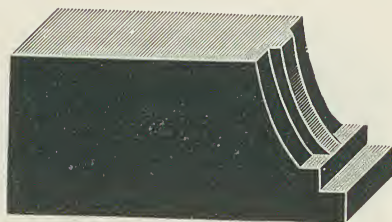
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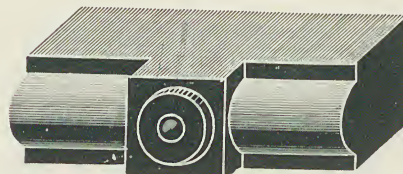
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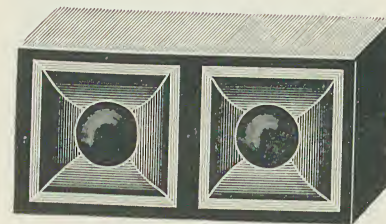
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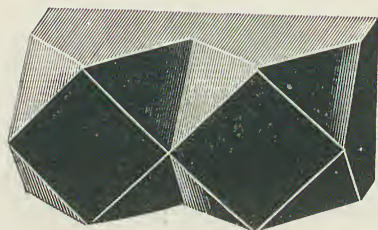
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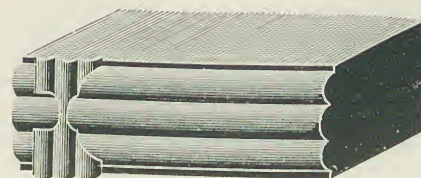


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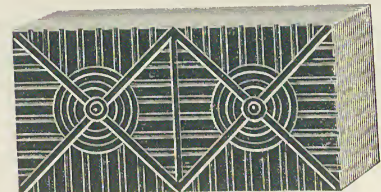
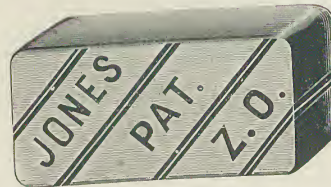
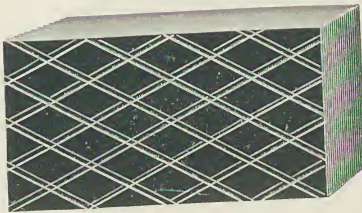
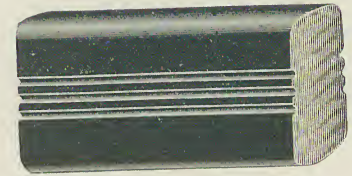
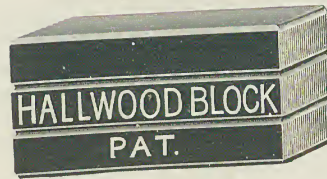
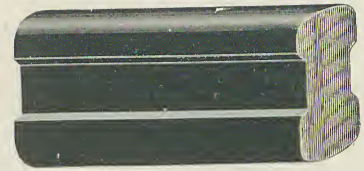
93

Re-Pressed Brick.



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Re-Pressed Paving and Sidewalk Bricks.



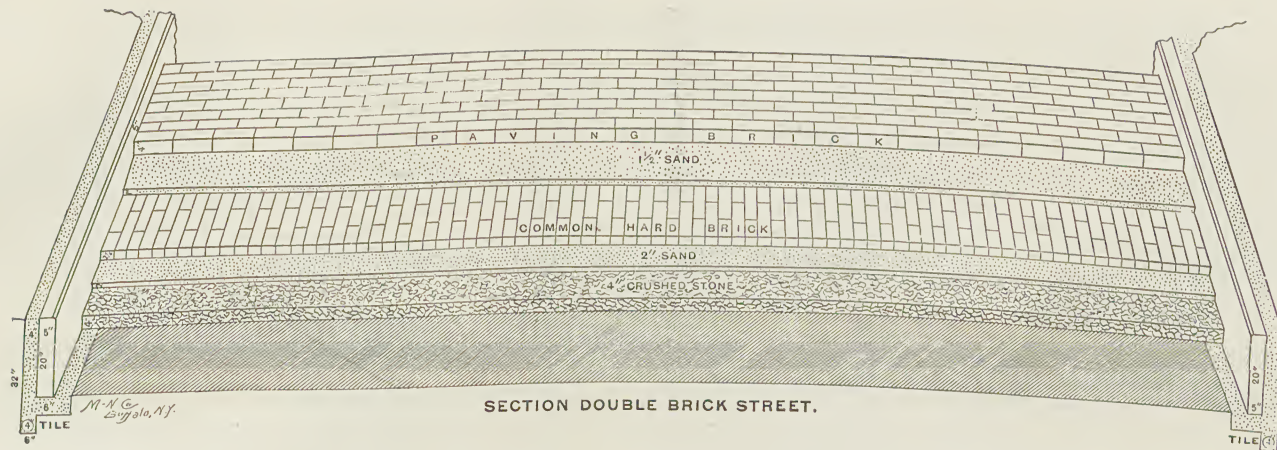
## BRICK STREETS

In all cities, without exception, brick roadways have surpassed expectation. Ornamental, clean, noiseless, healthful, smooth, durable and cheap, they have each year advanced in popular favor. In almost every case the energetic efforts of their advocates were required to secure their adoption, but after trial had demonstrated their fitness and economy, the greater difficulty has been to restrain construction within the ability of cities to pay its cost.

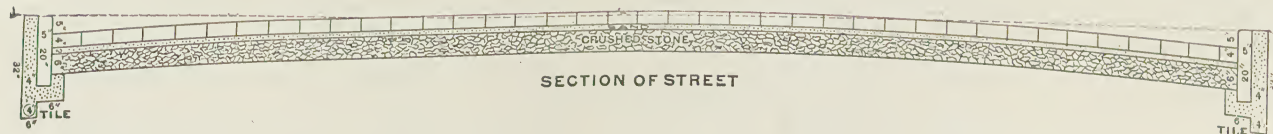
Brick manufacturers should carefully study the specifications of these improvements to know that their material will be assured of the conditions of success: to wit, A well drained and a solid rolled road-bed. Both are prime essentials. A 4-inch tile drain under each curb is important whether the roadway is clay, soil or gravel. The road-bed should be thoroughly rolled many times until very solid, with a ten or twelve ton roller. We give illustrations on following page of double and single brick streets.

Double brick streets are best where the principal heavy traffic of a city is hauled. Single brick streets are suitable for ordinary traffic and residence streets. Brickmakers should furnish the best vitrified brick only, and thereby insure the popularity and long life of this industry.

The American C. W. M. Company's Machinery during the past eight years produced 90 per cent. of all the Standard Street Pavers and Hallwood Paving Blocks manufactured in the United States. Buy the machinery that makes the best brick and the cheapest.



SECTION DOUBLE BRICK STREET.



SECTION OF STREET

# TERMS

All prices are for goods delivered at our works. We cannot be responsible for any damage which may occur in transit, or by labor strikes, accidents or other unavoidable causes.

## PAYMENT

For large orders, one-half of the amount payable on delivery of machinery, the balance six months thereafter. For such deferred payments, notes are to be given bearing interest, with good personal security (such as the nearest bank will accept and pronounce ample); unless by special agreement.

For small orders from buyers not well known to us, amounts are payable by cash on delivery.

## RESPONSIBILITY

We guarantee the machinery to be of good workmanship and of good material, and capable of performing the work for which it is designed. Inasmuch as clays differ so much in quality and behavior, and therefore need different treatment and preparation before they can be molded into shapes, it cannot be expected that we can guarantee our machinery to work a material we have not had an opportunity to examine. We therefore desire our prospective customers to send us, PREPAID, a sample of the clay they propose to use. If, upon examination, we have any doubt as to the quality of the clay, it will be necessary to send us either one or two barrels of each kind of clay intended to be used (prepaying freight charges thereon to Bucyrus, Ohio), so that we may run it through the machine they propose to purchase, and form it therewith into such articles as they may want to manufacture. When clay is sent, put on the name and address of sender, so that it can be identified.

After the articles, either Brick, Tile, Hollow Blocks, etc., are burned, we will express them back for examination, and state about how much per day can be done of such work with the respective machines. For testing and burning the clay our charges are \$5.00 for each test, WHICH, HOWEVER, WILL BE CREDITED ON THE SUBSEQUENT PURCHASE OF MACHINERY FROM US. Analysis of one kind of clay, \$5.00.

We further guarantee the machine against defects or flaws in the material, which may have escaped our observation and develop after the machine is put to the full working strain, by agreeing to ship a duplicate of the defective part free of charge.



Unless unforeseen circumstances occur, the promised time of delivery is duly kept ; but we give no compensation if delivery is delayed.

## INSTRUCTIONS

These will be furnished in printed form and will contain all that is necessary to insure success in operating our machinery, and should be strictly followed. Should a purchaser, however, not meet with success, which may be the result of not following the instructions, or from carelessness of his assistant, or other causes, we will agree to furnish an expert to teach them and make the machinery work as recommended. In this case the purchaser agrees to pay all the traveling expenses from Bucyrus or Willoughby and return, board, and five dollars per day for every day such a man is compelled to be absent from our works. Should, however, a defect exist in the machine, owing to defective workmanship or flaws in the material, which prevents the perfect working of the machine, we agree to make no charge for traveling expenses or services. It is understood that a slight adaptation in the die or cutting device to suit a peculiarity to make it work more perfect, shall not be considered a flaw or defect in the machine.

## FREIGHT

Purchasers always pay freight, and must look to the carrier for damages which may occur in transportation. When machinery is not prepaid it will be shipped in our name in care of the purchaser, belonging to us until paid for. Where extra packing is necessary for long distance or export, the cost of such extra packing will be charged, not exceeding three per cent of net price.

## ERECTION

In case the purchaser of machinery requires the assistance of an expert to superintend the erection and operation of the same, such agent will be furnished by us, for which the expert is to receive and the purchaser to pay five dollars per day, board and expenses for traveling from and to Bucyrus or Willoughby.

## DRAWINGS

These will be furnished free of charge to purchasers of a complete plant. When drawings have to be made for plants where other machinery besides our own make is to be included, the cost of such drawings will be charged. All weights are approximate and are not binding.

## PATENT NOTICE

Manufacturers and users of Brick Machinery are hereby notified that we are exclusive owners of nine patents on Brick Cutting Tables of the designs shown on pages 73 to 81 of this catalogue. Said patents are numbered as follows: 421,691; 421,692; 446,338; 453,054; 456,449; 491,747; 532,222; 392,952; 551,690, and cover all the details of construction of these tables which were solely and wholly of our creation. Copies of these patents can be obtained by application to us, or to the Patent Office at Washington, D. C. All persons making, vending or using these Tables without our permission will be sued for infringement and prosecuted to a finish.

AMERICAN C. W. M. CO.

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